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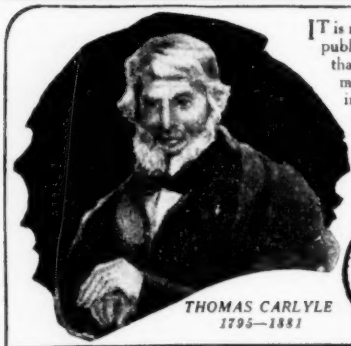

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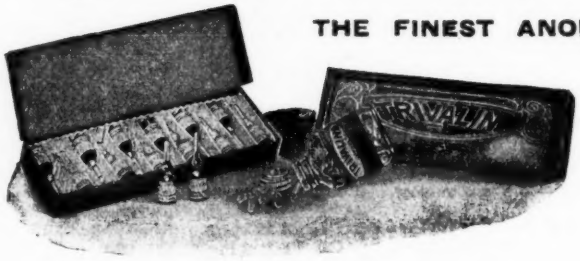

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★ *Brit. Med. J. 1942, 1, 668.*
J. Clin. Endocrin., 1942, 2, 639.

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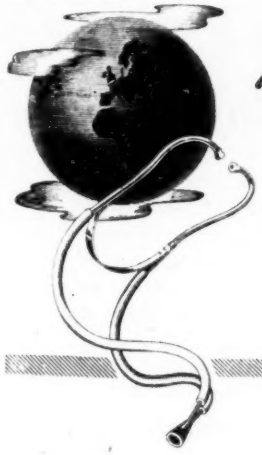

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1. Della Vida and Dyke (1942) Lancet **2**. 275. Riddle (1940) Amer. J. med. Sci. **200**.145. Isaacs et al. (1938) J. Amer. med. Ass. **111**.2291
2. Minot et al. (1928) Amer. J. med. Sci, **175**. 599.

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AVIATION MEDICINE *

SIR HAROLD WHITTINGHAM
KCB, KBE, M B GLASG., LL D, F R C P, K H P
AIR MARSHAL; DIRECTOR-GENERAL OF MEDICAL SERVICES, ROYAL AIR FORCE

BEING naturally interested in the great American doctor in whose illustrious name I am being honoured on this occasion, I find, from studying his record, that John Jeffries of Boston is an example of a type which never fails to emerge in American history—a man of vision, a modernist much in advance of his time, as were Benjamin Franklin and Abraham Lincoln.

John Jeffries throughout his life had close ties with England and Scotland. He studied under that world-renowned surgeon John Hunter, and he obtained the degree of doctor of medicine at Aberdeen University in 1769, being the first American to receive this distinction. From 1771 to 1774 he served as assistant surgeon in a British Navy ship and at a naval hospital ashore. He then saw service in British military hospitals in America from 1775 to 1779, and later with British troops in action at Savannah and Charleston. Doubtless, had an Air Force existed then he would have served with it also; probably it would have been his first and last love.

Settled for some time in England after the War of Independence, Jeffries, a keen meteorologist, was the first medical man to study aviation medicine. In November, 1784, at his own expense, he made a balloon ascent over London with the French aeronaut, Monsieur Jean Pierre Blanchard; by this means was obtained the first record of scientific data of free air at 9000 feet above sea-level. It can also be claimed that John Jeffries was the first man to drop leaflets from the air, having received the quaint notion of dropping greeting cards to his many admirers below, during his flight over London.

In January, 1785, Jeffries and Blanchard made their epic balloon flight across the English channel, reaching the coast of France within two hours, after jettisoning practically all their equipment, scientific and otherwise, including most of their own clothing. Within another hour they landed near the historic Field of the Cloth of Gold, showing that Jeffries' training in Aberdeen had been indeed thorough. This was also the beginning of the air-mail service, for John Jeffries carried with him a letter to another American then in France, a descendant of the great Benjamin Franklin. Incidentally, lovers of Robert Louis Stevenson know that this famous balloon exploit is enshrined in the story *St. Ives*.

After being fêted at Calais and Paris, Jeffries returned to England and was made Warden of the Cinque Ports, an honour granted only to specially distinguished men; the present holder being our Prime Minister, Mr. Winston Churchill.

ANGLO-AMERICAN RESOURCES POOLED

Fortunately, the liaison in matters of aviation that existed between our two countries some 160 years ago, inaugurated by Dr. John Jeffries, has been extended during recent years in proportion to the remarkable progress made in aeronautics. Early in 1939 I had the privilege and pleasure of visiting the United States of America to see the high lights of aviation and its associated researches. I visited 12 States and was particularly impressed by the fine work done at Wright Field, in Dayton, by Colonel (then Captain) Harry G. Armstrong. I returned to the United Kingdom determined to build up as far as was in my power an aviation medical research organisation much on the lines of Wright Field, where the aeronautical engineer and other scientists worked as a team with those engaged in the physiology of flight. The urgent problem was to fit the machine to the man, instead of the other way round, as had so long been the case owing to insufficient coöperation between the engineering and medical groups. That was a defect which this Institute has done much to eradicate.

Since 1939 there has been the closest and happiest liaison between British and American research centres and workers, both Service and civilian, including your National Research Council. To our mutual benefit, members of research groups from both countries have visited each other, and continue to do so, to study and discuss various problems first hand. Thus on either side of the Atlantic and in the field, America, Britain, and Canada have pooled their knowledge and resources in aviation medicine to improve the comfort and efficiency of those engaged in flying during training and on operations. Among the problems investigated, roughly in order of their occurrence, have been the following:

How to provide an adequate supply of oxygen, with the maximum of comfort, at all oxygen-requiring heights under the most adverse conditions.

How to protect aircrew against cold and the occurrence of frostbite, which has now been reduced to negligible proportions (1 case in 2000 bomber sorties; that is, 1 case in 12,000 individuals engaged in these sorties) by the provision of suitable clothing, particularly electrically heated garments.

How to prevent blacking-out in combat during high acceleration without interfering with pilot-readiness, active movements, and performance under all climatic conditions.

How to guard the eyes against the glare of the sun and searchlights, without reducing the field of vision or visual acuity, and how to obtain and maintain the optimum night vision under various flying conditions.

How to deal with such stratosphere problems as the prevention of bends, the physiological requirements in pressure cabin design and development, including explosive décompression and baling out from aircraft at altitudes over 30,000 feet.

How to lessen fatigue, which is such a potent factor in the causation of air accidents.

How to improve intercommunication, as poor intercommunication leads to fatigue and many errors—especially during the height of air operations.

How to protect those in cockpits and cabins of aircraft against the possible entry of noxious substances, such as exhaust gases or hydraulic fluids.

How to prevent air-sickness, particularly among paratroops.

In addition a considerable amount of research and development has taken place in connexion with air-sea rescue, and last but not least, the evacuation of casualties by air.

The United States Army Air Force has done a stupendous job in this global war in evacuating casualties by air from all fronts to overseas bases and to the United States. Major General David N. Grant, your Air Surgeon, deserves the greatest credit for this wonderful achievement, as he does also for the gigantic strides that your country has made in aviation medicine during this war.

The British endeavour, as regards evacuation of casualties by air, has been less only in proportion to the forces employed. In 1944 the Royal Air Force alone evacuated approximately 300,000 cases of sick and wounded, mostly Army personnel, on all fronts—the Far East, the Mediterranean and in Europe proper—without a single mishap, although this evacuation involved some 20,000 separate flights and much of the flying was done from forward landing-strips near the enemy, over jungle, mountains, and sea in all sorts of weather.

HAZARDOUS INVESTIGATIONS

I should now like to pay tribute to certain medical men of both countries who have done outstanding work for aviation. Some of our theoretical calculations of the effects of stratosphere flying on man have proved to be wrong; certain hazards were overstressed, others were underestimated with resulting casualties. In 1941, during the experimental phase of adapting the Boeing 17 for operational work at higher altitudes, two Royal Air Force medical officers—Squadron-Leaders W. K. Stewart and D. A. H. Robson—had the misfortune to be in one of these aircraft when it broke up at an altitude of some 32,000 feet. Stewart was the sole survivor.

Colonel Randy Lovelace, of the US Army Air Force, in 1943 purposely and courageously baled out at 40,000 feet to make physiological observations in a parachute descent from such an altitude. He became unconscious

* Part of the speech made in acknowledging the John Jeffries award of the Institute of Aeronautical Sciences of the USA on Jan. 31. The four previous holders of the award have all been Americans—H. G. Armstrong, L. H. Bauer, E. C. Schneider, and E. Reinartz.

almost immediately after baling out and suffered severe frostbite of the hand; but fortunately landed safely. Only last year another distinguished American research-worker, Colonel Boynton, met his death doing an experimental delayed parachute drop from 44,000 feet, though he knew the hazards. He was a very brave man and a great loss to science.

Again, Squadron-Leaders J. C. Gilson, Pask, and Stewart carried out a series of dangerous experiments—to find out how long man could live during a parachute descent without additional oxygen—in rarefied atmospheres similar to those between altitudes of 44,000 and 25,000 feet. These laboratory experiments were carried to just short of extremis and gave valuable information to help perfect apparatus and technique for baling out in the stratosphere.

In studying the problems of high acceleration in aircraft, that brilliant young American scientist, Commander Eric Lillienkrantz, met his death tragically some two years ago.

In the Royal Air Force, Squadron-Leaders W. K. Stewart and S. Davidson have carried out since 1940 many hundreds of blacking-out experiments in the air, having to bale out from damaged aircraft on more than one occasion. Squadron-Leader Davidson has also for the past year been engaged in experimental flying on jet-propelled aircraft to study various physiological problems. In this connexion, it is of interest to note that some 120 RAF medical officers are qualified pilots, many being highly skilled—flying Spitfires and even jet-propelled aircraft.

Many medical officers have made physiological and psychological observations during actual air operations against the enemy to assess the strain, fatigue, behaviour of aircrew, and general efficiency of the flyer and his equipment. Thus, on a warm summer's day in 1942, that gay lovable Highlander, Group-Captain Hugh Corner, AFC, was shot down in his Spitfire by a Messerschmitt over the English Channel when studying what he called "mental lapses" of members of Paddy Finucane's fighter squadron. Wing-Commander Roland Winfield, DFC, AFC, has done some 50 operational sorties to study aviation medicine problems in Bomber and Coastal aircraft on all fronts. Wing-Commander J. C. Macgown, DFC, earned the coveted Pathfinder badge, studying night vision problems over Berlin and other enemy targets.

To assess the flotation value of life-jackets for the unconscious man, Squadron-Leader E. A. Pask had himself anæsthetised for a total period of 3¾ hours, while he was thrown into a swimming-bath in different positions, wearing various types of life-jackets. Many of these jackets were so designed as to ensure drowning of an unconscious man. Of the type he tested, the British Mae West, the New Zealand Navy, and the German life-jackets proved to be the most efficient and to give adequate flotation. A film of these tests was shown to all concerned and most of the defects have now been remedied.

WORKING TOGETHER

In conclusion, I should like to stress that these advances in aviation medicine have only been accomplished by the full coöperation of aircraft instructors, aeronautical engineers, medical men, physicists, physiologists, psychologists, and textile experts of the United States of America, Britain, and the Dominions working in the closest liaison.

Long may this association for our mutual benefit endure in peace as in war. To quote Mr. John Winant, the United States Ambassador to Great Britain, whose words are particularly applicable to aviation: "While we have accepted the machine, we have not always learned to collaborate with one another to make the machine the servant, and not the master of mankind. . . . Never has it been so necessary for man to live and work and coöperate with his fellow-men as it is today."

CLOTHING COLLECTION IN USA.—UNRRA and the voluntary relief agencies in the United States are planning a United Nations Clothing Collection for war-devastated areas. Mr. Henry J. Kaiser will be chairman of the appeal, and the American public will be asked to contribute 150 million pounds weight of clothing.

TREATMENT OF COMPOUND FRACTURES BY EARLY WOUND SUTURE AND PENICILLIN

F. H. BENTLEY *
M B, B SC MANC., F R C S
LIEUT.-COLONEL RAMC

SCOTT THOMSON
M D EDIN., D P H
MAJOR RAMC

PENICILLIN CONTROL TEAM, CMF

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M B LPOOL

J. A. KEY
M B EDIN.

M. H. WOSTENHOLM
M R C S

CAPTAINS RAMC; AT A BRITISH GENERAL HOSPITAL, CMF

AT the beginning of 1944 penicillin was first available to military hospitals in Italy. Encouraged by the experiences of surgeons in North Africa, and under the teaching of Lieut.-Colonel J. S. Jeffrey, at that time Penicillin Officer in Italy, a start was made in this hospital using penicillin in the early repair of flesh-wounds.

Patients were taken to the operating-theatre the day after their arrival at base hospital from the casualty clearing stations, usually about the fourth day. The wounds were cleaned, further excised if necessary before suture, and penicillin was instilled through rubber tubes into the sutured wound twice daily for five days. The results of the first 200 wound sutures done at this hospital have already been reported.[1] They showed primary union in 190 of the 200 consecutive cases. Simultaneously the practice was developing at other centres, until, under the instruction of the Consulting Surgeon, AFHQ, delayed primary suture became the standard treatment of all suturable flesh wounds at base hospital in this theatre of war.

The arguments that commend early repair of a flesh-wound apply with even greater force to the early conversion of an open into a closed fracture. After the first month's experience of the excellent results of early suture, it seemed justifiable to try the same method for wounds complicated by an injury to bone. Accordingly, in February, 1944, we began to treat open fractures by early wound suture and local instillation of penicillin through tubes, in addition to the routine methods of external fixation of the fracture.

The results were as satisfactory as in uncomplicated flesh-wounds, and this report describes the first 62 cases treated. All received penicillin locally into the wound. Later in the series, as more penicillin was available, some cases received a parenteral course as well, though without obvious difference in the result. Of the 62 fractures treated, 58 obtained primary healing of the soft tissues, and 2 healed after removal of a foreign body: these 60 all proceeded to normal bone union. Two were failures.

Methods

Of the 62 cases, 57 were battle injuries due to missiles and had received the routine primary wound-treatment at casualty clearing stations—namely, debridement, decompression, application of bacteriostatic and occlusive dressing. The majority were immobilised with plaster-of-paris. The remaining 5 cases were road accidents, of which 3 had been treated forward in similar fashion to the battle injuries. The other 2 were admitted directly to hospital where it was possible to combine wound excision with immedjate repair.

Casualties usually arrived at hospital about the 3rd or 4th day after wounding. Sulphonamides had been given by mouth as a routine, the average dose being 20 grammes. No further sulpha-drugs were given after penicillin treatment was begun. If on arrival the patient was not toxic and the limb was comfortable the wound was not disturbed, and the patient was given 24 hours' rest. During this day the limb was X rayed to define the fracture and the precise position of any foreign body. Next day the wound was examined in the operating-theatre, and sutured if practicable.

The time of wound suture varied from the 3rd to the 20th day, the average being the 6th day. The skin of the limb was cleaned and the wound was then explored with the finger. Any deep track was fully opened up to reveal the extent of the problem and in order that

* Formerly officer i/c Surgical Division of a British General Hospital, CMF.

1. Bentley, F. H. Report to War Office, May, 1944; *Brit. J. Surg.* 1944, **32**, 132.

penicillin solution might subsequently reach all parts of the wound.

The possibility of skin suture was demonstrated by pressing together the wound margins. The skin edges were then narrowly excised, together with the superficial wound, unless they were perfectly clean, and the wound margins were undermined for the minimum distance necessary to ensure approximation. Devitalised and loose tags of muscle were removed, and deep tracks were mopped dry. Loose bone in surrounding muscle was picked out, but fragments in the line of the fractured bone were not disturbed. Comminution of the bone was such that the "fracture-line" was usually an inch or two in length. Early in the series we learned the importance of removing a metallic foreign body lying in relation to the fracture, and thereafter such bodies were always carefully localised before operation and removed. (This subject is referred to more fully below.)

The wound was now ready for suture. Suitable lengths of fine rubber tubing (4 mm. diameter) for subsequent instillation of penicillin solution ("penicillin tubes") were introduced through stab incisions made at least 1 inch from the wound margins. Usually two tubes were introduced, one to either side of the fracture. They led down to the region of the hæmatoma surrounding the fracture without touching the bone. There is always a potential cavity around a comminuted fracture, and one tube at least was placed so that it would act equally well as a drain through which the cavity could be aspirated before each instillation of penicillin in the ward. This detail is important.

The skin was then closed with interrupted silkworm gut stitches. No deep sutures were used. A considerable degree of tension could be safely allowed, since under treatment with penicillin œdema was quick to subside, but extreme tension was dangerous—as always—and tight skin-flaps stretched over a hollow in the tissues ("tentage") were certain to break down at this point (vide infra). Where there was difficulty in closing a wound the answer was either to rotate a flap of skin and fat to complete the suture—a very useful manœuvre—or if the gap was floored by muscle to apply an immediate graft to the open area. This method of obtaining a complete closure was often employed and always successful. We wish to emphasise the importance of obtaining a complete skin closure at the repair operation if subsequent infection is to be avoided.

In cases of fracture of the extremities a dry dressing was secured to the limb and plaster fixation applied in routine manner, the rubber tubes protruding for 3 inches through the plaster. The tubes did not interfere with manipulation of the fracture as the plaster was being applied. When the cast was set, the tubes were secured to it with a stitch and penicillin solution instilled down each. They were then kinked over a sterile swab laid on the cast, covered by another swab, and the whole fastened down with a light cotton bandage.

Aspiration followed by instillation of solution of sodium penicillin was performed through the tubes morning and evening for the next 5 days. On the 6th day the tubes were freed from the cast and withdrawn, the small holes in the plaster being sealed with a plaster bandage. Usually the cast was not changed for 3 weeks, when the skin sutures were removed and a second plaster was applied.

The technique for fractures of the flat bones, ilium, and scapula was the same, except that no plaster cast was necessary and skin sutures were therefore removed on the 14th day.

Further treatment of the fracture followed routine lines. Exercises were encouraged and the patient was placed under the care of the physiotherapy department from an early stage.

DOSAGE OF PENICILLIN

Five c.cm. of sodium penicillin solution (500 units per c.cm.) was introduced through each tube at the end of the operation, and 3 c.cm. per tube twice daily for a further 5 days. Since most cases had two tubes, this amounted to 6 c.cm. of solution twice daily into the fracture region with a total dose of 35,000 units of penicillin. This proved sufficient to ensure sterilisation of the injured bone and soft parts with consequent primary healing. When parenteral penicillin was given in addition it was continued for 4 days (480,000 units).

TYPES OF WOUND

The 62 fracture cases treated in this way included both penetrating and through-and-through wounds. They varied in length up to 12 inches, but the average was 4 inches, leading through the covering soft tissues into comminuted bone. Comminution was often severe, as is customary with gunshot wounds, but the line of the bone, even if only occupied by bone chips, was surprisingly well preserved.

The bones involved were —

Tibia alone	10	Ilium	8
Fibula alone	7	Scapula	4
Tibia and fibula	5	Tarsus	4
Humerus	9	Patella and femoral condyle	2
Radius and/or ulna	13	Total	62

Major fractures of the femur were not studied, since fractures of this bone were segregated in three orthopædic centres in Italy where they were the subject of a special investigation.

Most of the wounds were clinically clean, but 8 were clinically septic, and of these a wound swab revealed coagulase-positive *Staph. aureus* in 7.

SELECTION OF CASES

The only criterion used in selecting cases for the above method of treatment was that there should be sufficient skin for complete closure, or, if sufficient skin was not available, that the surface of the resulting defect was suitable for skin-grafting. No other factor (such as the age or condition of the wound on arrival, the extent of comminution of bone or muscle laceration) was considered a contra-indication. As a result, the series so treated represented about 70% of all compound fractures admitted to hospital.

Results

Primary healing of the sutured wound and quiescent union of the fracture with no sign of inflammation occurred in 58 cases. No case was observed for less than 5 weeks, when some of the less serious fractures of the ilium, scapula, ulna, and fibula were fit for discharge to unit or convalescent depot. Other fractures were under treatment for a longer period, and all were retained until union was sound.

A feature of these results was the early recovery of function of the injured part as a result of the primary healing and absence of scar tissue, even though there had been much muscle loss. As an example, a wound of the back measuring 8 × 3 in., with extensive muscle laceration leading into a comminuted fracture of the body and spine of the scapula, was healed in 14 days, and the patient was discharged to convalescent depot in 35 days, having full movements of the shoulder and arm.

Fractures of the shafts of long bones had no points of unusual interest once healing of the flesh wound was secured, but two types of injury are worth special mention.

The first is the through-and-through wound of the foot with fracture of the tarsus and metatarsus. In the North African campaign we had considered that the worst results in the surgical division were obtained in the comminuted tarsal fractures, either from pocketing of deep infection or from painful union. We were eager therefore to attempt this present method of treatment, and were satisfied with the results. Primary union occurred in the 3 through-and-through wounds treated, and fusion of the fractured tarsal bones followed to give a painless foot under conditions of moderate strain. It was thought that the medical category of these men would be B 7. The fourth tarsal fracture was an interesting one demonstrating the possibilities of the method employed.

A mortar bomb explosion had split the soft tissues of the heel from malleolus to malleolus exactly like the incision for a Syme's amputation. The injury also split the os calcis in the same line, and the bone had opened out in an inverted V-shaped manner, the apex of the V being at the subastragaloid joint. There was little tissue loss, and it was possible to press the two halves of the bone together and suture the skin of the heel. A fine penicillin tube was in this case led

into the fracture. Primary union followed, and, after a long period in a series of walking plasters, the man left for the United Kingdom free from plaster or dressing as a walking case. The heel was free from tenderness and should be fit for moderate strain.

We consider that this case would have needed amputation but for the possibility of primary repair that the method offered.

The second important type of injury is the fracture that is compound into a joint, most commonly seen at the elbow and knee. Two case-histories illustrate the results in this type of injury.

Private A.—Bullet wound, fracture of the internal condyle of the humerus and coronoid process of the ulna, with a 6 inch flesh wound (anterior to the ulnar nerve) leading at one point to a ½ inch hole in the capsule of the elbow-joint. After removal of loose pieces of bone, the wound was closed by rotating a flap of skin and fat, and a fine penicillin tube passed down to a point ½ inch away from the rent in the joint capsule, which could not be sutured. Primary union followed and active movement was then encouraged. After 8 weeks there was 80% full range of movement at the elbow-joint, and the man was discharged to a convalescent depot.

Major B.—Mortar wound of the knee. A fragment of bomb had fractured the edge of the patella and passed across the joint deeply into the internal condyle of the femur, where it lodged. The foreign body and a piece of battle-dress were removed from the bone at operation, and a capillary rubber tube was introduced into the walnut-sized cavity that opened through the anterior articular surface of the femoral condyle. It was possible to suture the skin-wound without tension. Only 6000 units of penicillin was run into the bone cavity because it was feared at that time that an excess of fluid might soil the joint. The joint, however, remained quiescent and the wound healed by first intention. After 9 weeks the patient was walking, and the knee-joint was capable of full extension and 30° flexion. He was evacuated to the United Kingdom for prolonged rehabilitation.

Two cases of fracture of the ilium, whose wounds appeared to have united by first intention, broke down after 2–3 weeks. In each the reason for breakdown was a retained metallic foreign body causing a local abscess. In one case penicillin had been given parenterally as well as locally. Removal of the foreign body and re-suture of the wound combined with the use of penicillin locally were followed by quiescent union of flesh wound and bone. The subject of foreign bodies is referred to below.

L/cpl. C.—Grenade wound of the buttock, with a 5 inch wound through the full thickness of the glutei into a long, comminuted fracture of the ilium. X ray taken at casualty clearing station showed the fracture, but no foreign body was visible. Accordingly routine penicillin suture was performed, followed by a course of parenteral penicillin. Two weeks later the suture line gaped. A wound swab showed *Ps. pyocyanea* only. We were therefore at a loss to understand the breakdown, and the wound was re-explored. A cavity was found in the lateral part of the buttock connecting with the main wound and containing a small quantity of pus (*Ps. pyocyanea* only) and a lump of metal 1 in. × ¾ in., which lay outside the field of the previous X ray. The metal was removed and the wound resutured, again using penicillin tubes. Primary healing followed this second operation and the patient was discharged to convalescent depot at the tenth week.

Private D.—High explosive wound of the hip, with a 6 inch flesh defect above the great trochanter leading into a comminuted fracture of the ilium. There was a hole 1 inch in diameter in the fractured bone. X ray showed that the foreign body had passed across the pelvis and lay adjacent to the tip of the transverse process of the 4th lumbar vertebra. The foreign body was considered to be too far from the fracture to require removal, and the wound was sutured in routine manner, one of the penicillin tubes passing down to the hole in the ilium. Three weeks later the central inch of the suture line broke down and a sinus formed. Swab showed *Staph. aureus* (penicillin-sensitive). Because of the difficulty of an exact localisation of the foreign body and the problem of surgical approach, its removal was deferred, and it was hoped that the sinus would close spontaneously. This did not occur, and after 102 days an extraperitoneal approach was made from the right iliac fossa and a ½ inch piece of metal found and removed from the psoas muscle at the side of the body of L IV. No track was discovered between this site and the ilium, but suture of the orifice of the sinus and introduction of a penicillin tube through a stab incision down to the region of the hole in the ilium was followed by union. The man was discharged to convalescent depot 31 days later, having no obvious disability.

Two cases were failures—one a fracture of humerus with large tissue loss posteriorly, the other a fracture of the lower end of the tibia with a cavity in the bone produced by a large piece of metal. The latter case had parenteral as well as local therapy. In each instance the skin was sutured under tension over a hollow in the bone. It was impossible to rotate a flap and free grafting was impracticable. Breakdown occurred in both during the first week, swabs from the wounds showing *Ps. pyocyanea* only. These examples reinforce a lesson we have learned from flesh wound suture, that "tentage" spells failure.

In about half the total cases parenteral penicillin (4 days, 480,000 units) was given in addition to the routine local therapy. No difference was observed between the results of those having local instillation and those having a parenteral course as well. Both were equally satisfactory.

The disposal of the cases is shown in the table. Of the 62 cases of compound fracture treated by this method, 48 returned to duty. It is not unfair to assume that few of these would have remained on active service abroad if they had been treated by other methods. Twelve men went home, 8 for lengthy rehabilitation, and 4 because of multiple injuries. There were 2 failures resulting from undue tension in the suture-line, as described above.

DISPOSAL OF CASES

Site of fracture	Returned to duty	To UK for long rehabilitation	To UK for other injuries	Failures	Total
Tibia alone	8	1	0	1	10
Fibula alone	6	0	1	0	7
Tibia and fibula	2	3	0	0	5
Humerus	7	1	0	1	9
Radius and/or ulna	11	0	2	0	13
Ilium	7	0	1	0	8
Scapula	4	0	0	0	4
Tarsus	3	1	0	0	4
Patella and femoral condyle	0	2	0	0	2
Total	48	8	4	2	62

Discussion

The methods have been described in some detail because the results show that the presence of a bony injury need not complicate the practice of repair, and that uniformly good results may be looked for if the wound over the fracture can be closed. From our investigations we are convinced of the importance of removing a foreign body in relation to the fracture, of the necessity for complete skin closure, and of the value of local application of penicillin to the fracture region.

PRESENCE OF A FOREIGN BODY

In the suture of uncomplicated flesh wounds the presence of a buried metallic foreign body had not been found to be a source of trouble, so, unless it was large, a search was not made for any missile not readily found by the exploring finger. Early in this series of compound fractures, however, the importance of removing a foreign body was brought unpleasantly to our notice in the 2 cases of fracture of the ilium referred to above (L/cpl. C and Private D).

After this early experience we invariably localised foreign bodies precisely by X ray and removed them.

either at the first operation or by a separate approach after a week or so if removal through the wound of injury was impossible. Two cases in which the latter method was necessary were instructive in demonstrating the danger of a metallic foreign body in bone and the necessity for its removal. One was a fracture of the humerus and the other a fracture of the tibia, but the findings in both were the same. The piece of metal, after penetrating the cortex, had passed for 2 inches along the medullary cavity. One to two weeks after the suture operation the foreign body was exposed through a separate incision by sinking a burr-hole in the cortex of the bone over the piece of metal. It was found to be lying in a cavity in the medulla, and except at a few points was out of contact with the surrounding tissue through which it might otherwise have been sterilised by parenteral penicillin. Thus, in addition to the liability of remote physicochemical reaction, it constituted an immediate and uncontrollable source of infection. An illustrative case, not in the series, is quoted—

Private E.—Grenade wound of the ankle with foreign body lying in the centre of the astragalus. Skin suture was impossible. An occlusive dressing was applied and a five-day course of parenteral penicillin given. Two days later the wound was exposed and the foreign body removed. A swab was inserted into the cavity in which the metal had lain, and was reported "*Staph. aureus*+++, penicillin-sensitive."

In each of the two cases of fracture of humerus and tibia described above, a penicillin tube was inserted into the cavity in the medulla after removal of the foreign body and the skin incision was sutured. Normal healing followed and both men were later discharged to convalescent depot.

COMPLETE SKIN CLOSURE

The necessity for complete skin closure is twofold. It prevents further infection reaching the bone and reduces scar-tissue formation to a minimum throughout the whole wound, since deep tissues heal more rapidly and smoothly under intact skin. It is evident that what our American colleagues refer to as "the value of the intact epithelial envelope" is of prime importance in wound healing, and involves more than the prevention of infection.

Prevention of infection is nevertheless essential in the successful treatment of an open fracture, and it is our opinion that partial suture of a wound does not ensure that the fracture will become sealed off and safe from reinfection. The advisability of a period of drainage of a fracture by leaving the wound partly open is being debated at present. It appears to us that, if the hæmatoma region of the fracture is sterilised by instillation of penicillin locally, and pooling of blood or serum is prevented in this region during the first few days after repair by means of a penicillin tube, the problem of "drainage" is solved. The track of a penicillin tube—introduced through a stab incision—is closed in 48 hours after removal of the tube, and if the wound of injury is sutured there is no possibility of reinfection; our results support this latter contention.

Furthermore, information is available to show that reinfection of an incompletely sutured fracture wound does occur.[2] Fraser and his colleagues investigated the use of penicillin in the closure of open fractures admitted to a hospital in Sicily from the Salerno beaches. In 21 cases the wound over the fracture was only partly sutured, the wound was dusted with penicillin powder and dressed with soft paraffin gauze under a closed plaster cast. About half of the cases received a short (3–4 day) parenteral course of penicillin. A swab was taken from the wound at the suture operation, and again 2–3 weeks later when the plaster was changed. Eighteen of the 21 cases showed no pyogenic cocci at the suture operation, but only 7 of these were still uninfected at the change of plaster, 11 yielding growths of pathogenic bacteria. Thus out of 18 uninfected incompletely sutured compound fractures 11 subsequently developed pyogenic organisms in the wound.

Furlong and Clark,[2] in a series of compound fractures of the femur treated by partial suture and parenteral administration of penicillin (910,000 units over 8 days), reported that, out of 13 cases where wound swab at the time of suture revealed only coliform bacilli, 9 showed pyogenic cocci at the first change of dressing 3–4 weeks afterwards.

The precise significance, of pathogenic cocci in the granulating wound over a fracture has not been fully assessed. If the fracture is truly sealed off they may not be of great significance, but it is a common experience that in some cases in which a granulating wound over a fracture has been slow to heal a sinus into infected bone has later declared itself. There is no certainty of the final result in the description that is sometimes given of "wound granulating but fracture sealed off."

LOCAL OR PARENTERAL PENICILLIN ?

Inspection of a gunshot wound causing a compound fracture usually reveals an extensive area of comminuted bone and considerable laceration and bruising of the surrounding muscles, which are lifted off the bone for a short distance so that a potential space exists around the fracture site. The whole area of damaged bone and muscle is filled with extravasated blood, and is referred to by us as the "hæmatoma region." Only the clot lying in the wound cavity, and the larger loose pieces of bone in surrounding muscle can be removed at operation. There remain numerous more or less avascular bone particles in the fracture, and much extravasated blood among the bone fragments and in the damaged muscle. If bacteria are carried into this region by the missile they can multiply out of range for the moment of the full effect of a blood-borne bacteriostatic that must reach them by transudation across the damaged area. They may therefore still be active when administration of the bacteriostatic is discontinued.

These observations imply that parenteral penicillin may not be effective in sterilising infection lying in the hæmatoma region during the first week or so after injury, and this is borne out in practice. For example we may quote 2 cases of through-and-through gunshot wounds of the thigh with compound fracture of the femur and small clean flesh wounds. In one, the wounds were completely sewn up on the 5th day, and 600,000 units of penicillin given parenterally over 5 days. In the other, repair was done on the 10th day, and penicillin given for a week with a total of 840,000 units. In both the wounds united, but from the 15th to 21st day deep inflammation was evident, and pus discharged through the suture-line. Culture gave a growth of *Staph. aureus*, penicillin-sensitive. A sinus into infected bone developed later. In another case, a shell wound of leg with fractured tibia, the wound was completely sutured on the 5th day, and 480,000 units of penicillin given parenterally over 4 days. A week later the wound became inflamed and pus containing *Staph. aureus* was discharged. The organism was found to be penicillin-sensitive.

Similar observations have been reported by Furlong and Clark in their War Office report of May, 1944. Bacteriological data are provided by Fraser and others who were able to examine fracture wounds in the middle of a parenteral course of penicillin. They describe 3 cases where, at the end of 3 days' administration (360,000 units), swab of the fracture region revealed *Staph. aureus*, penicillin-sensitive.

There seem to be two ways of trying to solve this problem. One is to continue the parenteral administration of penicillin throughout the whole period in which the hæmatoma region is being revascularised, bone fragments absorbed, and the new osseous framework laid down. The other is to apply penicillin locally in such strength and volume that it spreads and diffuses through the hæmatoma region and maintains a bacteriostatic concentration in and around the damaged tissues, until by the end of 5 days pathogens are destroyed.

We have no experience of the former method. If it is attempted, it might be necessary to prevent collection of pus in the potential space around the fractured bone; for it is recognised that a pool or "sump" of pus may form in this situation, particularly in the case of a gross fracture surrounded by bulky muscle. Our experience with flesh wounds shows that a pool of pus, even if sterile or infected by non-pathogenic organisms, invariably bursts through the suture line. It is one of the

2. Fraser, I., Patrick, W., Thomson, S. Report to War Office, November, 1943. Furlong, R., Clark, J. M. P. Report to War Office, May, 1944; *Brit. J. Surg.* 1944, **32**, 147.

advantages of the local instillation method that although it adds fluid to the hæmatoma region, injection can be preceded by aspiration, and if the tubes are correctly sited no pool will occur.

The instillation of solutions of penicillin to effect sterilisation and primary union of a compound fracture wound was the logical outcome of the success of this method in suture of flesh wounds. We have found it entirely satisfactory when combined with the surgical technique described in this report. There may be occasions when it is doubtful whether the penicillin solution can reach all parts of the wound, and when the addition of parenteral treatment will constitute an additional safeguard. But among many cases of penetrating lacerated muscle wounds of the thigh we have had no instance in which local penicillin therapy failed to sterilise any pyogenic infection present; and in this series of compound fractures local penicillin therapy alone was found to be in no way inferior to local plus parenteral treatment.

Pus due to coliform bacilli ("gram-negative pus"), which is a feature of local penicillin-solution technique, was not found a source of trouble, providing it was not allowed to collect and constitute a mechanical problem. Neither in these fractures nor in 500 flesh wounds sutured similarly have we seen an instance of sepsis of bone or soft tissue due to *Ps. pyocyanea*.

There is a further problem to discuss—the use of local and parenteral penicillin in combating infection due to a *Staph. aureus* that is insensitive to penicillin by the ordinary tests. A survey of battle wounds showed the organism of initial sepsis to be almost always the *Staph. aureus*, and in an investigation of many hundreds of wounds at forward base hospitals we have found that 20–50% (depending on therapy at casualty clearing station) harboured this organism on admission to hospital; 17% of the staphylococci were resistant to concentrations of penicillin obtained in the blood or tissue fluid by parenteral therapy alone. This constitutes an appreciable hazard in the closure of an open fracture.

The percentage of staphylococci resistant to penicillin is less, however, when the concentration of penicillin is increased above that obtained in the blood. In a study of strains of *Staph. aureus* designated "resistant," all grew freely in broth containing 1/10 unit of penicillin per c.cm., corresponding to the usual blood concentration. Approximately half grew when the penicillin was increased to 10 units per c.cm., and only a few grew in a concentration of 50 units per c.cm.

It is reasonable to think that the instillation at 12-hourly intervals of solutions of penicillin containing 500 units per c.cm. will maintain a higher local concentration of penicillin than that produced by parenteral therapy, and therefore will be more effective in dealing with staphylococci that possess some degree of resistance.

Summary

Wound suture at an early stage combined with penicillin therapy was performed in 62 cases of war wounds associated with fractures. There were 58 immediate successes, with primary union of flesh wound and bone, and 2 in which success followed operation for removal of a foreign body. Two were failures.

All cases received penicillin locally, but only half received a course of parenteral therapy in addition. The same degree of success was obtained in both.

The importance of removing a foreign body and the necessity for complete skin closure are stressed.

Parenteral penicillin cannot sterilise avascular bone fragments and extravasated blood around the fracture during the first few days, whereas the local instillation of penicillin in sufficient strength and volume can do so. When combined with the surgical technique described, local penicillin instillation has proved entirely successful in sterilising and effecting primary union of compound fracture wounds.

We wish to thank Colonel C. H. K. Smith, Officer Commanding the British General Hospital, for the help that made this investigation possible, and for permission to quote from the hospital records; Major F. Pygott for his careful radiological localisation of foreign bodies; and Miss T. F. Rickards, Physiotherapy Service, under whose direction rehabilitation of the injured men was conducted.

COMPOUND FRACTURES OF THE FEMUR

TREATED WITH THE AID OF PENICILLIN

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THE use of penicillin has encouraged the employment of methods in the treatment of fractures of the femur which, although considered desirable, have not been generally regarded as safe.

When a debridement has been done some days previously, the use of penicillin makes it possible to sew up infected and purulent wounds and to encourage active movement, not only without danger to the patient but with positive benefit to the limb. On early closure and early movement depends the fullest possible restoration of function, for early closure limits the extent of the scar and diminishes the chance of bone sepsis; and early movement of the knee is even more desirable in preventing adhesions in compound fractures than it is in closed fractures.

These methods were occasionally used before penicillin but now they can be used with greater success and safety. Formerly it was the danger of spreading sepsis that was feared, but now, with penicillin, we have the assurance that as soon as streptococci, staphylococci, and anaerobic bacilli enter the blood- or lymph-stream they are destroyed.

A possible reason for the lack of enthusiasm shown by some surgeons for the use of penicillin in fractures of the femur may be that with the exception of the injections they have treated their cases in the conventional manner. The skin has not been sutured as early as possible, nor have early movements been encouraged. Certainly penicillin does not have so dramatic an effect on local sepsis as it does on the prevention of its spread, but that prevention is absolute. For instance, there were no deaths, no amputations, and no septicæmia in our series; and it is noteworthy that Furlong and Clark (1944), who seem, on the whole, not to have been very favourably impressed by the effect of penicillin on these cases, also had no deaths from sepsis and no amputations for sepsis in their series of 70 compound fractures treated with penicillin; whereas in the 70 controls there were 3 deaths and 4 amputations due to sepsis.

The *Medical History of the War* (1922) quotes a memorandum by Sir Anthony Bowlby in which he estimated that at the end of the last war the overall mortality for fractures of the femur, excluding cases with associated injuries, was about 15%. Most of the deaths were due either to pyogenic infection or gas-gangrene. The *History* also shows that the value of early suture and early movement became appreciated towards the end of the war. Thus in No. 8 General Hospital in France, of 211 femur wounds treated by delayed primary suture, 161 were successful. Bowlby observed: "the results of treatment of open fractures of the femur have very greatly improved in proportion as the practice of delayed primary suture has increased. Closure diminishes risk of all kinds of complications and gives rise to much more rapid union." Further, Pearson and Drummond (1919) were impressed with the importance of obtaining knee movements from the start and for this purpose used Besley's callipers. In those days, even with the grave danger from spreading sepsis, it was thought desirable to close wounds early and start early movement. How much more desirable is it to follow these principles now, when the danger to life and limb is removed and we are free to concern ourselves with attempting to restore a complete and early return of function.

EXPERIENCE SINCE D-DAY

We have treated 70 cases of fractures of the femur since D-day, June 6, 1944. The great majority of patients reached us between the third and tenth days after wounding. All came in Tobruk plasters, having had debridement of the wound, the wound being left open. Many had associated injuries, but all had travelled well and were not obviously imperilled by the journey. The primary treatment they had received was of a very high standard.

Nearly all the patients had had some penicillin before arrival, but the doses in transit varied within wide limits, both as to dosage and number of injections. As a rule, they had had four or five days' continuous treatment with two to five injections a day, the dose being usually 20,000 units and sometimes 50,000 units. There may have been a gap of some days when penicillin was not given, but on arrival here they were immediately started on a five-day course of 20,000 units intramuscularly every three hours.

Many patients arrived with a temperature of about 100° F and pulse-rate of 100–110 per min. The temperature in most of them subsided a week after suture. Sometimes the penicillin was omitted before the temperature had settled. The temperature was not thought to be a reliable guide, for penicillin is sometimes in itself the cause of pyrexia. Better evidence of the patient's progress could be obtained from inspection of their local and general condition, and, if they have been ill for a week or so, by an estimation of the hæmoglobin.

After 24 hours' rest, the plasters were removed under anæsthesia and the wounds were inspected. Nearly all had a sulphonamide 'Vaseline' gauze pack. Pus in varying degrees was present in most of the wounds. In some the pack had, by swelling of the soft tissues from œdema, become a plug or bung and was damming up the pus. A few had sloughs, but when these were removed, and when the pus was cleared up, the wound looked clean.

After the first few cases, we became convinced that complete closure of the skin gave by far the best chance of early healing and avoidance of bone infection, and wherever possible the wound was thereafter sewn up completely, regardless of the amount of infection present. Even if the wound could not be completely closed at the first inspection, owing to œdema, as much as possible was sutured, and it was nearly always found that an incised wound without gross skin loss could be completely closed five days later.

The suturing was not determined by bacteriological findings but on anatomical grounds alone. It was felt that only streptococci and staphylococci would be likely to enter the blood and they would there be destroyed through the action of the penicillin. We have found that the penicillin-insensitive microbes have no tendency to give rise to septicæmia or spreading sepsis. It is probable that their effect remains local and that they largely act as saprophytes. If the wound is sutured they have no pabulum and consequently die off.

A swab was always taken at the time of first inspection. Only in 2 wounds out of the 70 cases were streptococci and *Staph. aureus* found on culture. Many, however, had coliform bacilli and some had *B. proteus*. A few had gas organisms and one had *Ps. pyocyanea*. The streptococci and staphylococci had been killed by the penicillin, and any pus was due to gram-negative organisms and was only mildly noxious.

DRAINAGE

Drainage is not desirable in these cases. It is probably better to include gram-negative organisms than, by leaving the wound open, to allow access to streptococci and staphylococci, which will grow after cessation of the penicillin, particularly if a thick layer of granulation tissue has formed a barrier to systemic penicillin. It is more important to prevent microbes getting in than to give a permanent exit for this kind of pus. With any sort of drainage there is the possibility of two-way traffic. Even penicillin tubes seem to do more harm than good. A sinus often followed, though as a rule this healed in a week or two. There is reason to suppose that it would not have occurred if the tube had not been inserted. In 2 instances in which a penicillin tube was inserted gram-positive cocci reappeared after the removal of the tube.

With drainage or without it there was no instance of spreading sepsis. It has not been necessary to open an abscess in any other part of the thigh than the original wound; in fact, only in 2 completely sutured cases was it necessary to reopen the wound. There has been no cellulitis, lymphangitis, or septicæmia.

Sumping, or the loculation of pus, has not occurred in any case completely sutured. In 6 unsutured wounds on the anterior aspect of the thigh, with the opening pointing upwards, there was a tendency for sumping to occur. In one case only was it accompanied by constitutional symptoms.

Suture, or even partial suture, by obliterating the dead space prevents a sump, and, even when the wound is not sutured, movements of the knee produce a pumping action of the quadriceps, thereby limiting the size of the sump by emptying it every time the muscle contracts. In no instance was a posterior counter-incision necessary; nor was it necessary to obtain dependent drainage by applying a spica and turning the patient on his face.

RESULTS OF SUTURE

Of 48 cases completely sutured, 40 healed in a month; 4 more healed at three months; 4 failed and had a sinus at three months. Of 17 which could be only partially closed, 11 were healed and 6 had a sinus at three months. Of 5 cases which had to be left completely unsutured 2 were healed and 3 had a sinus at three months. Thus only 4 of the 48 completely sutured had a sinus at three months against 9 of the 22 incompletely closed. The extent of the bone damage was comparable in each group.

The success which accompanies suture of the wound on the third day prompts one to think that it might with advantage be sewn up on the first day at the time of debridement, provided that continuous observation is possible. From our experience it seems as if, with penicillin, drainage after that period is unnecessary.

CHRONIC BONE SEPSIS

In 13 cases a sinus leading down to the bone was present at three months. Of these, 5 had a low-grade osteitis of cancellous bone at the upper or lower end. Four have had sequestra removed and there is a possibility of this being necessary in a further 3. One has a frank osteomyelitis; this man had a large buttock wound which it was impossible to suture.

UNION OF BONE

Union of these compound fractures proceeds as quickly or even more quickly than in closed fractures. The factors which lead to this surprising result are difficult to determine. The fragmentation that accompanies a gunshot wound may contribute to a more copious production of callus. It may be that the hyperæmia caused by the controlled infection plays its part. If the sepsis were not controlled by the penicillin it might become a danger to union, but a slight amount of infection may help union by inducing a useful hyperæmia. Even when chronic sepsis of the bone develops, as evidenced by a persistent sinus, union was not delayed, nor was walking deferred.

It is extremely undesirable, and also quite unnecessary, to remove bone fragments unless, as occasionally happens, they are widely displaced. Even if stripped of periosteum the fragments become revascularised and incorporated in the bone. It is remarkable how a mixture of small bone fragments and pieces of metal grows together to form a new shaft.

To secure union in a grossly comminuted fracture it is unnecessary to allow the bone to shorten by telescoping the fragments. The normal length may be safely retained. The maximum shortening in the cases treated with traction was ½ inch, with the exception of one case in which bone fragments were inadvisably removed.

Where, owing to bone loss, a mere bridge of bone remains joining the two main fragments, union proceeds at a normal rate, but there will be no tendency for this bridge to thicken, possibly because it becomes closely invested by a new periosteum. Before weight-bearing is allowed it may then be necessary to thicken the bridge by a graft.

In compound fractures, as in closed, the most potent cause of delay is overpulling. Non-apposition of the bone fragments, so long as they are not overpulled, does not appear to delay union. Lateral gaps of ½ inch are satisfactorily bridged, but with some delay in weight-bearing.

In 62 cases the average time of union, judged from the time of discarding all splintage, was thirteen weeks. Weight-bearing was allowed about two weeks later. In 5 cases a graft to reinforce a slender bridge of bone will

be necessary. Two cases will not unite owing to loss of the head and neck. One has simple non-union requiring plating after the bone ends have been freshened.

RESTORATION OF FUNCTION

Until penicillin became available most of our compound fractures of the femur were left unsutured and treated in spicas. Most had stiffness as a result, and it was not uncommon to see an immobile lifeless limb sodden with pus. Since then they have been treated with skeletal traction with a pin through the tibia, and early movement of the knee. We took this somewhat unorthodox step with diffidence, fearing that the effects of sepsis might be increased and that union and the healing of soft parts might be delayed thereby. None of these fears however proved justified. Early movement of the knee brings about the early disappearance of œdema and greatly reduces adhesions between tissue planes and muscle and bone. The danger of intra-articular adhesions is also lessened. Not only is the extent of the scar greatly limited by early suture, but it is prevented from contracting by movement of the knee; mere static contractions of the quadriceps are less effective in this respect.

Early movements of the knee are accompanied by movement at the fracture site in the early weeks. This has been accepted. But it has proved no disadvantage, since it has caused no loss of apposition and no delay in union.

In 12 cases early movement was not possible because either extensive bone loss or a large buttock wound made a spica necessary, or, in 3 instances, owing to irreparable damage to the quadriceps tendon and the knee. All but 1 of these 12 cases had a greatly restricted range at twenty weeks.

The great majority (58), however, were treated with early knee movement. At four months, 3 of them had full range, 23 had 90° or more, 21 had 45°–90°; it is expected that all of these 47 will have a full range at nine months. Nine cases had a range of 30°–45° at four months, and a proportion of these will have a full range at nine months. In 2 only was the knee written off.

If a forecast may be permitted we expect that 40–50 of these patients will have a normally functioning limb within nine months.[1]

SUMMARY

In the treatment of 70 cases of compound fractures of the femur due to wounds sustained in operations in North-West Europe penicillin has abundantly justified itself as a defensive weapon. To exploit its value to the full it should be used as a weapon of attack; for with it two extremely desirable principles can be followed—early closure of the wound and early movement of the knee.

There were no deaths, no amputations, and no evidence of spreading sepsis. In the 48 cases that were completely closed restoration of function as well as the rate of union were equal to that in closed fractures. It is expected that from 40 to 50 will eventually have no disability from their fractured femur.

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1. In oblique fractures we have had 3 instances of the spike of the upper fragment piercing the quadriceps. Before an appreciable range of movement could be obtained at the knee the spike had to be removed. This was not done until the fracture had united at its upper part.

THE REGIMENTAL MEDICAL OFFICER.—At a recent conference in Bengal attended by 158 doctors from the British and American armies, the Royal Navy, and the RAF, emphasis was laid on the responsibility borne by the regimental medical officer. Like the general practitioner at home, he was the backbone of the medical services, and only too often he had little reward. His work was at times monotonous, at times arduous, and often taken for granted; he lacked the stimulus of close contact with his colleagues and with hospital researches, and his patients were lost to him as soon as they were evacuated. The conference accepted the principle of "Best Men Forward." The RMO, working alone and under conditions of discomfort and often danger, should be regarded as the embodiment of the RAMC motto *In arduis fidelis.*

ARTIFICIAL RESPIRATION BY RIB TRACTION

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THE main time-honoured methods of artificial respiration, Schäfer's and Silvester's, depend for their efficacy on the elastic recoil of the chest wall and diaphragm, which occurs only when the muscles of respiration have maintained their tone and integrity. The weak points in Schäfer's method have been described by Eve (1943). In the deeply unconscious patient, whether his state is due to drowning, electrocution, or general anæsthesia, the elastic tone of the respiratory muscles fails progressively. Barclay has shown by radiography that in the prone position the diaphragm is pushed up into the full expiratory position. This will be accentuated in a toneless body. Silvester's method will also fail in the moribund person, in whom the intercostal muscles have lost their tone. Both the methods break down because they are directed towards helping expiration rather than inspiration. When the tone of the respiratory muscles is partially or completely lost, the thorax must be in the position of expiration. Hence a simple method which actively brings the chest into the position of inspiration should be effective. One should aim at expanding the chest rather than squeezing the already contracted lung.

THE METHOD

Experimenting on warm cadavers and on patients under deep general anæsthesia, I found that by pulling on the lower costal margins in an upward and outward direction with hooked fingers of both hands the chest can be made to assume the raised position of inspiration. Release of the pull, coupled with gentle pressure on the lower ribs with the palms of the hands, is quite sufficient to bring about expiration.

If the patient is on a bed or on an operating-table lying on his back, the operator stands at the head end and places the palms of the hands on the lower part of the chest, the middle fingers being on the anterior axillary lines. The fingers are hooked round the lower costal margins on both sides. The pull is made in an upward and outward direction, thereby raising the anterior portions of the ribs as well as widening the lower costal arches. After a steady pull for 3 seconds the pull is released and the chest is gently pressed downward and inward, while the extended fingers exercise the same pressure on the abdomen. Doing this about 12–15 times a minute brings about a respiratory exchange of over 7000 c.cm. of air. In addition, the expansion of the chest and outward stretching of the diaphragm, owing to the widening of the lower costal arches, helps the venous return of the blood.

If the patient is in the face-down position, the operator stands as before, but his hands are brought underneath the chest and the lower costal arches are pulled upwards and outwards.

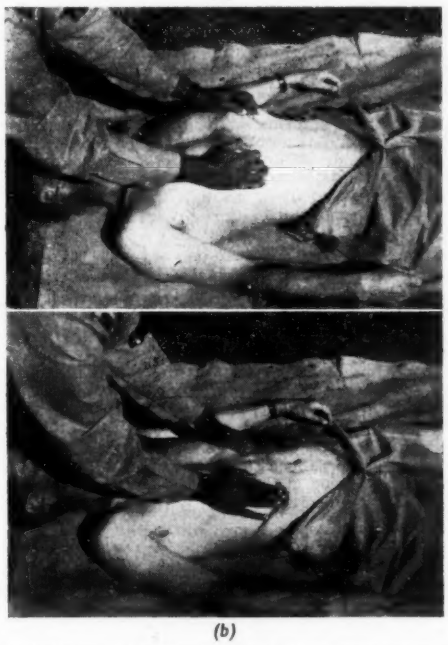
I had the opportunity to give an extensive trial to this method in the following case of cerebral hæmorrhage.

The patient was deeply comatose and had Cheyne-Stokes breathing. His pulse was slow. In half an hour his breathing stopped, and his pulse could not be felt. I tried the above method of artificial respiration, never hoping to bring back the pulse, but to my surprise the pulse at the wrist returned after three or four attempts. Respiration was not restored so artificial respiration was continued. For purposes of comparison one of the surgeons tried the Silvester method, but found it much less effective because the respiratory muscles were toneless. The patient was kept alive for 6 hours, including a period of operation lasting for over an hour, by this method of artificial respiration alone; after that he was put in a mechanical respirator. I observed that whenever artificial respiration was stopped for a few seconds his pulse began to fail, showing that the method helps to restore the circulation as well. The surgeons and the anæsthetists of the hospital were satisfied with the efficacy of the method.

EFFICIENCY OF THE METHOD

Cordier (1943) lays down three requirements for judging the efficiency of any method of artificial respiration.

It must give sufficient pulmonary ventilation for a normal subject at rest; stimulate the heart and circulation to transport oxygen to the tissues; and be harmless in itself, easy of execution, and rapid in attaining results. In order to satisfy the first criterion I experimented on a patient under deep anæsthesia with the help of Captain Forrest the anæsthetist, and Captain Bose. The muscles



Method in use: (a) inspiratory position; (b) expiratory position.

were relaxed and the man had almost stopped breathing. The air expelled by pressure on the lower ribs after the inspiratory pull on the costal margins was collected in the rebreathing bag of a Boyle's apparatus and measured. This was compared with the amounts collected by Schäfer's and Silvester's methods. The average results were as follows.

Schäfer's method	278 c.cm.
Silvester's method	425 ,,
New method	836 ,,

The considerable difference in ventilation is evidently due to the fact that the new method assists both the inspiratory and the expiratory processes.

I believe the method also satisfies Cordier's second requirement. In the case reported above the pulse returned to the wrist after three or four attempts at artificial respiration. During the process the tips of the hooked fingers of the left hand of the operator press on the left side of the diaphragm, and so probably stimulate the heart mechanically. The venous return to the heart is aided by increased negative pressure produced inside the chest during inspiration.

The method is harmless and easy to execute, and is particularly convenient when respiration becomes suspended during anæsthesia, since it causes little disturbance to the patient.

SUMMARY

A new method of artificial respiration is described in which inspiration is encouraged by intermittent traction, upwards and outwards, on the costal margin.

The method also helps the venous return, and puts less strain than other methods on the operator.

My thanks are due to the surgeons and anæsthetists of the General Hospital for allowing me to give an extensive

Continued at foot of next column

HIGH BLOOD-PRESSURE AFTER BATTLE

JAS. D. P. GRAHAM, M D GLASG.
CAPTAIN RAMC

IN 1920 Alvarez, in an examination of the blood-pressure of 2930 healthy male students, found that the mean systolic pressure for men of 16–40 years was 126·5 mm. Hg, ranging from 90 to 175 mm., with half the sample giving figures between 116 and 136 mm. Hg. He pointed out that 50 out of 100 men (in America in 1920) died of some cardiovascular or closely related disease, and suggested that a systolic blood-pressure of 140 mm. Hg in a young man is indicative of a "hypertensive diathesis." Treadgold (1933) found that of Royal Air Force pilots examined between 1927 and 1931 2% had blood-pressures over 140/90 mm. Hg; the effect of hot climates was to reduce slightly the average pressure (average pressure of pilots at home 125/77, abroad 122/76 mm. Hg), but 308 pilots in Egypt had the same blood-pressure as the home average. According to Gilchrist (1940) hypertension may be described as balanced if the systolic pressure is equal to the diastolic pressure × 1·7, and divergent if it is greater than this. The latter type of hypertension is common in young people in states of excitement or hyperthyroidism. It is, however, unlikely that long-continued emotional tension can of itself be the sole factor in determining persistent diastolic hypertension.

Bramwell (1940) considers that any systolic pressure up to 150 mm. Hg is acceptable as normal. Sorapure (1918) analysed the findings in 769 soldiers in training, and gave figures with a range of 105–135 mm. systolic and 70–90 mm. diastolic pressure. In 1000 healthy civilians of 15–40 years Woley (1910) found an average systolic pressure of 125 mm. Hg; Symonds (1923) found an average systolic pressure of 124 mm. Hg in 100,000 people aged 20–40 years of normal build, and an average diastolic pressure in 60,000 people of 80–83 mm. Hg; he thought that pressures of 155/94 mm. Hg and over indicated danger. Fisher (1914), from an analysis of 4000 people aged 20–40 years, gave the average systolic pressure as 124·5 mm. Hg, while Smith (1918) examined 400 recumbent fit men, age 19–39 years, and obtained average figures of 127/84 mm. Hg, with a range of 119–132 systolic and 80–88 diastolic.

It seems clear, then, that a fit man of normal build within the age-limits of 18–40 years should have a blood-pressure not exceeding 155/95 mm. Hg, and that most samples examined will give a mean reading of about 125/82 mm. Hg. Any diastolic pressure of 100 mm. Hg or over may safely be termed hypertensive.

PRESENT INVESTIGATION

The object of the investigation now reported was to ascertain if a minimum period of one year of active warfare had any deleterious effect on the physical well-being of the troops engaged. It was decided to select representative samples of all ranks and services of an Armoured Brigade of considerable experience in Western Desert campaigning, and to record the resting blood-pressure, pulse, and hæmoglobin readings. In this way it was hoped to form an estimate of the state of the blood and cardiovascular system as an indicator to the general physical state of "fit" personnel.

Hæmoglobin was estimated with an uncalibrated Sahli hæmoglobinometer, the pulse was felt at the wrist, and the blood-pressure was taken with a good mercury manometer in the supine position after 5–8 minutes' rest in the shade, the lowest of three readings being recorded. Day temperatures were about 80–85° F in the shade and the subject was exposed to a draught while resting. The level of diastolic blood-pressure was that recommended by the British opinion of the Anglo-

Continued from previous column

trial to this new method on their cases. I am indebted to the O/C an I.G.H. for allowing me to experiment on an anæsthetised patient, and to Captain Forrest and Captain Bose for their assistance.

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US committee on the measurement of arterial blood-pressure (*Brit. med. J.* 1939, ii, 184). All subjects were fit for duty, medical category A, and had not "been sick" for four weeks. Officers, NCOs, and men were tested impartially; all were familiar with the examiner and were reassured before examination. In general their attitude was one of mild interest; no-one appeared to be excited. The men were used to routine medical inspections, were long familiar with their doctor, and had neither hopes nor fears about the outcome of the test.

The survey began on May 28 and finished on June 28, 1943. It was made on 695 men between the ages of 20 and 38 years, of average height and body-weight, and was conducted at a training area in Tripolitania 4–8 weeks after battle had ceased. All the men had served for a year in active field operations, the vast majority for 2–3 years; many had been in the Middle East for continuous periods up to 5 years. Local conditions at the time of testing were good, with sea-bathing and organised sports and entertainment. Training programmes were light and no exercise was taken within an hour of examination. Diet had been supplemented with bread, a little beer, and some vegetables.

RESULTS

The blood-pressure readings in the 695 men were as follows—

Mean blood-pressure of total sample, 154/90 mm. Hg $\pm^{0\cdot867}_{2\cdot206}$ (SE)

Number of hypertensive cases (diastolic 100 mm. Hg), 187.

Mean blood-pressure of hypertensive group, 178/114 mm. Hg $\pm 1\cdot729/0\cdot916$.

Mean blood-pressure of normal residue, 146/81 mm. Hg $\pm 1\cdot382/1\cdot212$.

Of the whole group, 26·9% had a diastolic pressure of 100 mm. Hg or over, and 38% had a systolic pressure of 160 mm. Hg or over. The mean pressure of these cases was of the balanced type of hypertension, suggesting that the observed results were not due to immediate excitement.

The resting pulse-rates ranged from 50 to 116 per minute, with a mean figure of $74 \pm 3\cdot2$. Well-marked sinus arrhythmia was noted in 5·1% of the whole group.

Of the 187 hypertensive cases, the urine was tested in 125; 3 cases had albuminuria and were sent to hospital. Only 21 of the 187 cases complained of any symptoms, which took the form of headaches, palpitation, and dizzy spells or "black-outs" on bending down or on first rising in the morning. It was possible to re-examine 33 of the cases with a diastolic pressure of 100 mm. Hg or over after two months during which local conditions remained the same but the prospect of further battle had temporarily receded. It was found that 28 cases had partially returned to normal so as to have a mean blood-pressure of 157·7/92·1 mm. Hg.

The majority of the hæmoglobin figures were normal; 27 out of 245 measured had a reading of 90% or less on the Sahli scale, while 60 men (24·5%) gave a reading of 110% or over, the maximum being 130%. Of these 60, 13 had a diastolic pressure of 100 mm. Hg or over, and a resting pulse-rate of over 100 per minute. There did not appear to be any constant relationship between high hæmoglobin readings and hypertension.

DISCUSSION

The hypertension among this sample of troops resting after battle may have been of renal or of neurogenic origin, dependent on (*a*) long subsistence on battle rations; (*b*) "desert life" (i.e., dust, movement, dehydration, lack of proper rest, frequent physical strain); (*c*) "battle strain" (i.e., a degree of anxiety neurosis or the result of frequent maximum physical effort with an attendant anxiety factor).

The food factor is unlikely to have been important, for the rations were well balanced and did not differ substantially before and after the test was carried out except perhaps in palatability. There was little concrete evidence of kidney damage among the hypertensive cases, but as Goldblatt and others (1934) have shown it is possible to produce a persistent high blood-pressure of renal origin although there is no evidence of renal disability in the urine. Dehydration was a persistent feature of campaigning life in the desert, with a high incidence of hæmorrhoids, varices, and calculi. Treadgold (1935) found no difference between the blood-pressure of fit men in the United Kingdom and in Egypt, but his subjects would not be suffering from physical or mental strain or dehydration. His psychoneurotic cases had normal blood-pressure, so a mild degree of anxiety neurosis would seem unlikely to affect the pressure.

For days on end men taking part in a big battle show evidence of hyperadrenalinæmia, with a fast pulse, pale face, and enlarged pupils, even when there is no immediate danger. This is more obvious in morally strained or battle-weary troops and if often repeated and long-continued might cause persistent hypertension through overaction of the suprarenals or hypertrophy of the medial coat of the arteries (McDowall 1941). The tendency shown by a large proportion of the few cases re-examined after 2 months' rest to return towards normal blood-pressures, though there had been no change in climate, diet, or dehydration but personal anxiety had been relieved, favours a neurogenic origin of the hypertension.

SUMMARY

In a sample of 695 men from an Armoured Brigade who had experienced at least a year of desert warfare resting pulse-rate, hæmoglobin, and blood-pressure were recorded.

A symptomless hypertension was found in 187 cases (27%). When 33 of the hypertensives were re-examined after 2 months' freedom from battle anxieties, 28 showed a normal pressure.

My thanks are due to the staff of the Oxford Institute of Social Medicine who lent their apparatus and their skill in statistical evaluation of the results.

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EXCORIATION AROUND FISTULÆ
CONTROL BY BUFFERED GELS

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IN operations involving the alimentary tract or pancreas, it occasionally happens that leakages of fluid containing proteolytic enzymes cause excoriation of the skin around the wound or drainage-tube. Such digestion and irritation, if long-continued, is very distressing to the patient. We have observed that until the leakage of digestive fluid ceases, and so the prime cause is removed, the application of standard preparations, ointments, or lotions to the skin is of little value.

By identifying the principal protease present in the exudate, which is presumably responsible for digestion of the skin, it has been found possible to apply a solution buffered at a carefully selected pH such that the proteolytic action is destroyed or reduced to a minimum and which is at the same time compatible with wound healing.

The proteases with which we have had chiefly to deal have been the "pepsin" complex from wounds of the stomach, and the "trypsin" complex from operations on the small intestine, pancreas, or large bowel. In the former case pepsin has an optimum pH of 1·5 to 2·0 and is inhibited above pH 5·0 (Northrop 1931); cathepsin is also associated with gastric juice and probably with most tissues, and this has an optimum pH between 4 and 5, and has no action above pH 7·0. It follows, therefore, that a buffered solution on the alkaline side of neutrality will effectively minimise proteolytic activity arising from such fluid. We have used a pH of 8–8·5 with success.

In the case of fluids containing the tryptic complex of enzymes, an optimum pH for the digestion of proteins and of primary cleavage products is found around pH 7·8 and the activity is negligible on the acid side of pH 5·4 (Seth 1924). In such cases, therefore, an acid buffer of pH 5 0 bathing the skin should prevent excoriation, and this has been found successful.

The application of dressings soaked in these buffered solutions is not practicable, for most of the solution is lost by soaking away and by evaporation. However, the addition of a suitable inert non-toxic agent to the buffer solution, causing it to form a gel, greatly reduces the loss of solution from both these sources and at the same time brings the buffer into intimate contact with the affected surface. Experiments quoted below show that the buffering power of the solutions is augmented by the addition of the gelling agent.

PREPARATION OF SOLUTIONS AND GELS

(*a*) *Buffer solution pH* 5·0.—10·207 g. of potassium hydrogen phthalate is dissolved in water, 23·90 ml. of 1 N.NaOH solution is added, and the volume made up to 1 litre. To this 5 g. of chlorbutol is added to prevent the growth of bacteria and moulds. The resulting solution has a pH of 5·0 measured by the glass-electrode and forms the basis of all the acid-gels used.

(*b*) *Gelatin buffer pH* 5·0.—75 g. gelatin is warmed with some of solution (*a*) until dissolved and the volume made up to 500 ml. with solution (*a*). The warm solution is saturated with chlorbutol crystals; a firm gel having a pH of 5·0 to 5·1 forms on cooling. Variations of this gel using 10% gelatin and 5% agar have been tried, as has a mixture of 20% starch and 5% gelatin.

(*c*) *Potato buffer-gel.*—Owing to the relative scarcity of many of the ingredients of (*b*) a cheap and easily prepared product has been devised from potatoes, required only 3% gelatin. About 500 g. of peeled washed potatoes are autoclaved at 30 lb. pressure for an hour. They are then mashed and 300 g. of the mashed material is stirred into the warmed solution (*a*) and 15 g. of gelatin added with some excess chlorbutol. The volume is made up to 500 ml. with the buffered solution. This mixture is then sterilised at 15 lb. pressure and while hot is pumped through a sterile laboratory homogeniser. (An ordinary domestic "cream-making" machine will serve as well.) The resulting thick cream has a pH of 5·0 to 5·2. This gel has a tendency to separate out and should not be kept for more than a fortnight.

(*d*) *Congo red and polyvinyl alcohol gel.*—Recently an entirely new medium for these buffer solutions has been developed. In this the gel-forming properties of polyvinyl alcohol solution when combined with certain cross-linking agents is used. A 1% Congo-red solution in buffer solution pH 5·0 is added to an equal volume of 10% polyvinyl alcohol in buffer pH 5·0 at 50–60° C. On cooling, a clear red gel is formed having a pH of 5·0 to 5·2. It is extremely stable and may be sterilised by autoclaving at 15 lb. pressure without alteration of pH or gelling power.

(*e*) *Buffer solution pH* 8·0.—6·808 g. potassium dihydrogen phosphate is weighed out and dissolved in water, 23·4 ml. of 2 N.NaOH is added and the volume made up to 1 litre. The pH of this solution is 8·0 at 20° C, and it is used in the preparation of all the alkaline buffer gels.

(*f*) *Gelatin buffer gel pH* 8·0.—The preparation of this is similar to (*b*) but the buffer pH 8·0 is used. It is necessary to add 12·0 ml. of 2 N.NaOH to bring the pH to 8·0 owing to the acidity of the gelatin. This alkaline gelatin undergoes slow hydrolysis and should be used within 14 days of preparation. A cheap form of alkaline gel similar to (*c*) has been attempted but is unstable.

(*g*) *Borax and polyvinyl alcohol gel.*—15 g. polyvinyl alcohol is dissolved in 300 ml. of solution (*e*) by warming to 60–70° C. To the warm solution is added 5 g. borax dissolved in 200 ml. of the buffer solution and the mixture is well stirred. Gelation is almost immediate. The resulting gel is firm and stable and may be sterilised at 15 lb. pressure. The pH is 8·5 to 8·6.

COMPARISON OF BUFFER POWERS

To assess the power of the various preparations to resist changes of pH due to addition of acid or alkali a modification of the original unit of buffer power (van Slyke 1922) was used.

To 100 ml. of the given buffer gel, liquefied by warming, small measured volumes of 1 N.HCl or 1 N.NaOH were added. After shaking, the liquid gel was poured into the electrode chamber of the pH meter and the pH measured when cooled to room temperature. A curve having for ordinates the pH and for abscissæ the milliequivalents of H· or OH′ added was thus constructed. For the acid series of gels the mean milliequivalents of alkali required to change 100 ml. of gel from pH 5·0 to pH 6·0 was read off from the graph, and this figure is used in assessing the buffer power of the preparation. Similarly for the alkaline series the mean milliequivalents of acid required to change the pH of 100 ml. of the gel from pH 8 to pH 7 was found.

BUFFER POWER OF GELS

Buffer	pH	Constitution	Mean B* (pH 5–6)
Solution (*a*)	5·00	Aqueous potassium hydrogen phthalate	2·0
Gel (*b*)	5·00	15% gelatin in (*a*)	4·2
Gel (*c*)	5·00	3% gelatin + 60% potato in (*a*)	2·5
Gel (*d*)	5·00	5% polyvinyl alcohol + 0·5% Congo red in (*a*)	2·1
Solution (*e*)	8·00	Aqueous potassium dihydrogen phospate	(pH 8–7) 1·5
Gel (*f*)	8·00	15% gelatin in (*e*)	2·0
Gel (*g*)	8·60	3% polyvinyl alcohol + 1% borax in (*e*)	2·3

* B = milliequivalents of H· or OH′ per 100 ml.

As will be seen from the table, the buffer powers of the solutions are in every case increased by the addition of the gelling agents. This is most definite in the case of gel (*b*) on account of the acid protein nature of gelatin.

The plain gelatin gels suffer from one disadvantage—a tendency to liquefy at body temperature. Variations using 5–10% of agar in addition were tried and overcame this difficulty.

Undoubtedly on both the acid and the alkaline side gels utilising polyvinyl alcohol are to be preferred since they combine many excellent properties. Polyvinyl alcohol solutions, and gels derived therefrom, are chemically very stable and can be sterilised by autoclaving, are non-toxic, non-irritant, and bacteria and moulds do not grow in them. The material is manufactured by E. I. du Pont de Nemours of USA and is not readily available here at present. It is a vital material in the plastics industry and larger supplies will probably be forthcoming soon. We would emphasise, however, that it is the buffer solution controlling the pH and not the vehicle that is the active agent in these treatments, and that the other gels described are satisfactory.

ILLUSTRATIVE CASES

1.—Male, aged 46. Operation for perforated duodenal ulcer. After 5 days a green discharge from lower end of wound excoriating the surrounding skin caused much discomfort. Fluid: alkaline, trypsin ++, amylase +. Gelatin buffer gel pH 5·0 applied. Excoriation rapidly subsided and irritation ceased; discharge gradually stopped and incision healed after 28 days.

2.—Male, aged 73. Carcinoma of rectum. Laparotomy and pelvic colostomy. After 12 days a chronic mucous discharge began, giving rise to a large area of excoriation around the wound. Discharge: pH 8·6, trypsin ++. Gelatin buffer gel pH 5·0 applied to whole area. The preparation was varied, using 30% starch/3% gelatin, and 10% agar/30% starch gels of pH 5·0. The excoriation slowly subsided and discomfort was relieved.

3.—Male, aged 50. Duodenal ulcer. Posterior Polya gastrectomy. Slight discharge causing excoriation developed after 4 days. Fluid: pH 7·4, trypsin +, amylase ++. Gelatin buffer gel pH 5·2 applied, and excoriation subsided in 7 days. Fluid flow gradually ceased and wound healed up after 18 days.

4.—Male, aged 68. Carcinoma of œsophagus. Gastrostomy performed and catheter inserted. After 6 days there was considerable excoriation and soreness of the skin around the tube. Fluid regurgitated from tube contained free HCl and pepsin and had a pH 5·0. Area around tube was dressed with a buffer gel of 10% gelatin and 5% agar at pH 8·0. Soreness and excoriation rapidly diminished.

5.—Female, aged 50. Fæcal fistula following hemicolectomy caused extensive excoriation. Fluid; faintly alkaline,

trypsin ++, amylase faintly positive. Potato gel pH 5·2 was used as a dressing and the condition improved rapidly and was almost clear in 7 days. Treatment with the same gel was continued but excoriation recurred after 16 days. A sample of the gel examined showed pH 4·7 and it is probable that the increased acidity was responsible for the relapse. Testing a sample of potato buffer gel at intervals shows that it should not be used for longer than 14 days after preparation on account of slow production of acid. Unfortunately this case was transferred and it was not possible to continue the treatment with fresh gels.

6.—Female, aged 62. Biliary fistula following cholecystectomy. An erythematous area appeared around the opening with considerable soreness. Fluid: pH 5·3; bile-salts, pus cells, and a trace of blood present; trypsin negative, pepsin negative. The area was dressed with polyvinyl alcohol buffer gel pH 8·5. The soreness was relieved and after 3 days the skin was clear; the treatment was continued until the fistula closed up.

DISCUSSION

The clinical trials have shown that discomfort and excoriation due to proteolytic enzymes may be successfully overcome by pH control along the lines indicated, and case 6 suggests that it is sometimes possible to use the method in conditions for which digestive enzymes are not demonstrably responsible.

Davidson (1925) and Legroux and Loiseleur (1941) have suggested that the toxæmia of burns and septic wounds is partly due to absorption into the circulation of protein cleavage products from the autolysis of tissues. This autolysis is chiefly caused by the enzyme cathepsin, which is active in slightly acid media, and the rational treatment would seem to be to minimise its activity by shifting the pH to the alkaline side where the enzyme is inhibited. This is the original basis of bicarbonate baths and compresses in the treatment of burns. The use of buffered gels for this type of treatment is now under consideration.

SUMMARY

The preparation of acid and alkaline buffered gels is described and their relative buffer powers have been measured.

By using such gels of the appropriate pH, excoriation of the skin by proteolytic enzymes has been successfully treated.

It is suggested that the same principle might be applied to the reduction of tissue autolysis in burns.

We wish to thank the surgical staff of this hospital for their coöperation, and the Medical Research Council for a grant which made this work possible.

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Reviews of Books

Mosquito Control

(2nd ed.) W. B. HERMS, H. F. GRAY. (Oxford University Press. Pp. 419. 20*s*.)

THERE are more than 1400 described species of mosquitoes, and since their habits, noxious and otherwise, are almost as varied, it is not surprising that scientific mosquito control is a complicated business. Its importance hardly needs stressing, but it is a little surprising to learn that there were 1½ million cases of malaria in the United States in 1932—when the disease was considered to be at a low ebb. Herms and Gray naturally approach mosquito control from the point of view of their American experience; thus, their chapter on the education of the public will be of little direct help to the worker in primitive places. Yet here, as elsewhere in the book, the reader who extracts the general principles and applies them to his own situation will find much which is helpful. Control by drainage, flushing of streams, oils and larvicides, fish, and screens and nets are all dealt with in detail. It is suggested that DDT may in due course replace pyrethrum, except possibly in aerosol sprays. The sections on control in rural and urban areas again approach the situation from a primarily American standpoint, with much emphasis on cemetery urns, duck clubs, and ornamental garden ponds. There is a useful appendix on mosquito identification.

Textbook of Surgical Treatment

(2nd ed.) C. F. W. ILLINGWORTH, MD, CH M EDIN., FRCSE, (Livingstone. Pp. 564. 30*s*.)

IN this second edition the chapter on burns has been rewritten to incorporate the work of Colebrook in Glasgow, so that it now conforms to modern ideas. The use of plasma to restore proteins in the stage of shock is noted, but there is no mention of the administration of large volumes of M/6 sodium lactate solution by mouth for the same purpose. The rest of the book is largely unchanged.

There are not sufficient technical details for the book to be of use to those undergoing training in surgery, but senior students reading it will get their values right and gain a sound outlook.

What is Hypnosis?

ANDREW SALTER. (Richard R. Smith. Pp. 88. $2.)

THE theme of this essay is that "hypnosis now remains merely a term of convenience. It is all conditioning, and when this is constantly kept in mind hypnosis, or conditioning, becomes an instrument of the most fantastic power, and the person under treatment needs neither faith, nor hope, nor confidence for satisfactory psychotherapy." The writer is a successful hypnotist, ignorant of the objections against explaining every habit and every instance of learning as due to "conditioning," but familiar with some recent scientific writings, such as Hull's on the psychology of hypnosis. He describes his methods of teaching "autohypnosis"—a process which enables the subject to make himself deaf to all noises but the hypnotist's voice and otherwise reduce his field of awareness ("one of my subjects ... hypnotizes herself as she rides to school from the suburbs in a trolley car each morning.") He advocates training on these lines for soldiers, since he has produced by hypnosis deafness to air-raid noises played on the gramophone. Fanciful proposals, uncritical explanations, descriptions of skilled technique, and sensible reasons for rejecting claptrap are curiously juxtaposed.

New Inventions

NEEDLE FOR MARROW PUNCTURE AND INFUSION

MARROW puncture and infusions are now an accepted part of modern medicine. The complexity of some of the needles used, and there unsuitability for both diagnostic and transfusion purposes, has led to a search for a more satisfactory design. The needle here described has proved suitable for both procedures, while being simple in construction.

The length of the needle has been reduced to a minimum, to prevent obstruction of the patient's vision and mouth when introduced sternally, and the butt has been made as small as practicable to prevent the needle becoming top-heavy. The bore is of Record fitting and has been made for use with standard blood-transfusion apparatus and equipment. The adjustable guard with slender wings enables the needle to be inserted at whatever angle the operator desires, and prevents too deep an insertion. The needle may be held firmly in the final position by a strip of adhesive plaster over the wings. A handle is provided to assist control and ease of introduction.

The needle has been made for me by Messrs. Down Bros.

My thanks are due to the Director-General of Medical Services, Royal Air Force, for permission to publish this note. I am also indebted to the Commanding Officer and my colleagues at an RAF hospital, and to Mr. W. Middleton and Mr. Cook of an RAF maintenance unit for making numerous trial patterns.

E. M. DARMADY, MB, MRCP
Squadron-Leader RAF.

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References: Jour. of Mental Science, Jan. 1941; Jour. of Mental Science, Jan. 1942; Practitioner, Sept. 1942.

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THE LANCET

LONDON: SATURDAY, FEBRUARY 24, 1945

Penicillin in Compound Fractures

THE fourth to the ninth day has come to be looked on as the golden period for wound closure. Thus "delayed primary closure" proved its value in soft-tissue wounds in Italy, and with penicillin to relieve the surgeon's anxiety about sepsis the principle has been extended to the open fracture. In this issue BURNS and YOUNG in England and BENTLEY and his colleagues in the CMF show how amazingly successful penicillin and early closure can be, confirming the Canadian results summarised by MACFARLANE in our issue of Feb. 3. The Botleys Park surgeons have treated 70 open fractures of the femur with no deaths, no amputations, and a maximum shortening of half an inch; they anticipate that 50 of the 70 will have normally functioning limbs within nine months. BENTLEY and his colleagues have treated 62 open fractures of other bones, obtaining primary union of flesh and bone in 58. There is an obvious temptation to go one better—to advocate primary suture at the first operation. Penicillin should theoretically make this possible, and BURNS and YOUNG nod their approval. But this temptation should be resisted. It is not always possible at the primary operation to tell the living from the dead. As CHURCHILL[1] points out, at this stage "recognition of all devitalised tissue is oftentimes impossible . . . disturbances of blood-supply and subtle changes that indicate impending death of tissues may not be detectable." Moreover, after wound excision local oozing is inevitable, and penicillin cannot reach the inside of accumulated blood-clot. Packing the wound for a few days will allow this exudate to escape. Clearly then, primary closure carries an unjustifiable risk. To wait longer than the ninth day, on the other hand, results in the tacking down of the flaps, which lose their elasticity, and allows the skin to organise in the position of slack; to suture the skin then is a formidable operation, necessitating much undercutting. Every day after the fourth gives infection a greater chance to assert itself. Partial suture, as BENTLEY and his colleagues emphasise, is not enough—it still leaves an aditus for infection—so every attempt should be made to close the skin completely, if necessary by cutting flaps or immediate skin-grafting. Any necrotic tissue must be excised before suture, and CHURCHILL from his extensive experience with the CMF declares that the leaving of such dead or avascular tissues behind is almost solely responsible for the failures; to that BENTLEY and his colleagues add the retained foreign body in the fracture area. BURNS and YOUNG have found it safe to suture on clinical grounds alone. "Count your blessings one by one"—no brawny œdema, no gross sloughing, pus minimal. This does not absolve us from taking wound swabs, for if anaerobic organisms are found they are an indication for a longer course of penicillin. BURNS and YOUNG maintain that with such suture gram-negative infection of the wound can be ignored, since the body can cope with it, and the CMF surgeons have also been little troubled by coliforms and *Ps. pyocyanea*; but their technique allows pus to be aspirated off.

There is still difference of opinion as to the virtues of local application. BURNS and YOUNG gave their penicillin parenterally, and they contend that local application may lead to formation of sinuses. In time of war, once the patient leaves the theatre, we naturally try to avoid interference with the wound, and local injections by tube must carry some risk of implanting new organisms: MCKISSOCK and his colleagues[2] have demonstrated how difficult it is to exclude secondary invasion along tubes. No locally injected penicillin will find its way into the crevices of the fissured and splintered bone, and it cannot be counted on to run between packed muscle layers. Systemic administration of 15,000 units three-hourly gives a local concentration in the wound fluid of 2 units per c.cm., and 0·1 unit per c.cm. is said to be adequately bacteriostatic. But BENTLEY and his colleagues, who used local therapy alone or with parenteral injections, rightly point out that only by local therapy can dead tissue be thoroughly soaked in the chemotherapeutic agent: where transport difficulties make the wounded come for operation late, and full excision is not always possible, local penicillin thus has its place. They point out too that though 17% of the staphylococci found in their wounds were penicillin-resistant, the organism would still respond to high concentrations of penicillin, such as could be introduced by local measures. GARROD,[3] on the other hand, thinks that nothing is gained by aiming at very high local concentrations. Where there are associated joint wounds penicillin led through tubes to within half an inch of the joint has advantages, for systemic penicillin will not diffuse into the joint space.

From the point of view of the fracture, the results obtained by BURNS and YOUNG, using below-knee pin-traction and early movements, are remarkably good. Others are claiming equally good results from plaster immobilisation. It has been well said that the successful treatment of a fractured femur depends more on the surgeon than the method. The below-knee pin is certainly highly successful in the routine treatment of the simple fractured femur. The use of "pumping" movements, when pus is present, hardly has textbook approval, but BURNS and YOUNG believe that this unorthodox method is justified by results. The movements they allow are active movements, and pain will prevent the patient tearing his healing tissues.

Altogether we have every reason for satisfaction with the progress in treatment of this severe injury. Penicillin has made infection no longer inevitable in war. As BURNS and YOUNG point out, it may not ensure local sterility or clean healing, but it does ensure that the patient will not die of septicæmia, and relieved from that fear the surgeon can do in the early days of a compound fracture what without penicillin he would not dare to do for months, if at all. But those concerned with the policy of penicillin usage are to be congratulated on having early realised that penicillin was no excuse for delaying or skimping surgery. Like all other chemotherapeutic agents it

1. Churchill, E. D. *Ann. Surg.* 1944, **120**, 265.

2. McKissock, W., Logue, V., Bartholomew, I. *Brit. med. J.* 1944, ii, 551.

3. Garrod, L. P. *Ibid*, Jan. 27, 1945, p. 107.

cannot sterilise dead devitalised tissues. The knife is still the touchstone for success. The need to revere skin, and to deliberate before excising any millimetre of it, has been generally recognised. The need for resting the tissues, especially in the early critical days after excision, is no less important. To the surgeons in the forward area who do the first wound excision, rather than to penicillin, is due the main credit for the success of delayed primary closure, and both reports pay tribute to these young surgeons for the thorough primary surgery they have been doing. If we may borrow a phrase from GORDON-TAYLOR,[4] "*Macte virtute, puer esto.* Well done, young man!"

Traumatic Anuria

FOUR years ago, when the first papers appeared on crush syndrome in air-raid casualties, it was stated that "crush injuries are not new. They are commonly seen on the coalfield, where the treatment is careful nursing and non-interference rather than physiological and biochemical assay."[5] Apparently, however, no such cases had been recorded, and the only previous accounts of the condition were in German descriptions of military casualties of the last war, together with some cases retrospectively diagnosed which were reported in the Messina earthquake in 1910. It was expected that recognition of the crush syndrome in 1–5% of air-raid casualties would lead to its recognition in mining accidents: yet so far only 2 cases seem to have been recorded from mines, one by MCCLELLAND from Canada[6] and the other by A. CAPLAN and G. E. DUNKERLEY from India in our issue of Feb. 3. Discussing the reasons for the apparent rarity of the syndrome in miners CAPLAN and DUNKERLEY remark that it may not be diagnosed—and indeed it often remains undiagnosed even in London air-raid casualties. But they also think that it is genuinely uncommon; for in eight years' experience of accidents in underground workers they cannot recall a previous case of renal failure associated with limb injury. Where falls of stone occur, the miners are either dead when released or die immediately afterwards from other injuries.

Anuria, however, sometimes develops after traffic or industrial accidents, or war wounds, without any long-continued compression. In many of these cases it is hard to know whether the failure to pass urine is due to intravascular hæmolysis, to sulphonamide lesions of the kidney or ureter, to plain dehydration through loss of fluid with inadequate replacement, or to ischæmic muscle necrosis as in "crush syndrome" proper. Many severely injured patients are given sulphonamides and blood-transfusion; many vomit; some do not get enough fluid; and some suffer gross exsiccation because of a not easily displaced (however profoundly misplaced) belief on the part of nurses, and also of doctors, that the more hot-water bottles, electric blankets, radiant-heat cradles, and stoves-under-the-bed are applied to the shocked patient, the better for his "shock." To sort out these various possible causes in any given case, close clinical observation is necessary, and often laboratory or autopsy evidence as well—data that may be difficult to collect under the urgent conditions of military surgery. The series of 8 cases reported in this journal last December by DARMADY and his colleagues[7] illustrate well the difficulties encountered. After blood-transfusion, performed on the third day in case 1 and the fourth day in case 3, jaundice was noted on the following day, with blood-ureas of 72 and 68 mg. per 100 c.cm. Thus the renal defect found after death on the fourth day in case 1, and manifest in case 3 by a uræmia reaching 408 mg. at death on the seventh day, seems to have developed about the time of transfusion; in view of the relatively low initial blood-urea it can scarcely have preceded it. As the investigators point out, histologically the renal lesion of intravascular hæmolysis is similar to that of ischæmic muscle necrosis, and they can be differentiated only by identifying the respective pigments in blood or urine, by finding bilirubinæmia or jaundice (which follow hæmolysis but not myolysis), by discovering the temporal relationships, or by securing direct evidence of muscle necrosis, incompatibility, or hæmolysis of the donor blood. Another of the cases in this series showed gas-gangrene, which is evidence of primary muscle ischæmia: but though it is known that clostridial infection of the blood-stream produces hæmolysis, with gross hæmoglobinæmia and hæmoglobinuria, none of the 4 cases examined post mortem—including this one—had pigmented casts in the renal tubules. Though 5 of the patients received sulphonamide by mouth, no data are given incriminating this as the cause of the anuria, nor were crystals found in the fatal cases. The authors of the paper refer to claims that changes like those of crush injury are found in injuries without any long-continued compression, and in other conditions such as blackwater fever, pyloric stenosis with vomiting, and septic abortion. They consider that a common ætiological basis should be sought, and suggest that the renal changes may be due to anoxia, secondary to hypotension or vascular spasm or both.

The problem is evidently important, since the above 6 fatal cases accounted for a third of the deaths in hospital of 2000 selected casualties from the French battlefield. It is difficult to see how it can be solved except by observers specially detailed for the purpose, since the clinical and laboratory evidence is to be found chiefly in the very early stages of the renal lesion, and as a rule—in ischæmic muscle necrosis at least—chiefly within the first 24 hours of return of the circulation to the damaged part. Some details of the condition preceding wounding, and essential data such as blood-pressure and fluid intake and output are not beyond routine recording; but even such a simple test as the benzidine or guaiac reaction for the detection of hæm pigments in the urine, needs to be performed by someone conversant with its use. Experience is needed to avoid quite simple fallacies. Thus, if a patient is immobilised on his back, catheter urine may appear free from pigment unless care is taken to express the last few drops, by pressure on the abdomen; if the urine is acid, as is usual after injury, the pigment may be present entirely as precipitate or in casts in these last few drops.

It seems most likely that enlightenment will come from special teams, such as that of COURNAND and

4. Gordon-Taylor, G. *Brit. J. Surg.* 1944, **32**, 247.
5. Harris, H. A. *Brit. med. J.* 1941, **i**, 491.
6. McClelland, J. C. *Canad. med. Ass. J.* 1941, **45**, 332.
7. Darmady, E. M., Siddons, A. H. M., Corson, T. C., Langton, C. D., Vitek, Z., Badenoch, A. W., Scott, J. C. *Lancet*, 1944, **ii**, 809.

her collaborators, working on civil accidents, since these do not differ appreciably from battle injuries except in the rapidity with which they are admitted to hospital: under modern battle conditions it would be difficult even for special observers to use those clearance methods of investigating renal function developed by HOMER SMITH and used by COURNAND et al.[8] The results obtained so far by the latter group indicate that renal blood-flow is reduced during oligæmic hypotension: yet, despite the consequent tendency to anoxia, traumatic anuria is rare in "shocked" patients, and some other or additional factor seems necessary to account for it. If anoxia were the principal or sole factor, one would expect a cortical necrosis of the kidney, hitting first the most highly active tubules of the first convolution. This is only very rarely seen after injury,[9] but has been produced experimentally by SCARFF and KEELE,[10] who cut off the renal blood-supply for an hour or two. In contradistinction, the renal lesion after crush injury and mis-matched transfusion is mostly in the distal convoluted tubule, leaving the proximal ones unaffected.

Restaurant Hygiene

COMMUNAL feeding, already gaining in popularity before the war, has increased rapidly in the war years. British restaurants, factory canteens, meals in schools, the NAAFI, and numerous other war-time establishments, besides the regular restaurants, "help-yourself" and otherwise, are providing millions of meals every day, while the tea-shop and the ever popular public house provide fluid refreshment. The food and drink supplied come from many sources, are manipulated by many hands, and dispensed to many patrons, so public eating- and drinking-places must offer ample opportunity for the spread of infection. Cutlery and crockery, as well as food and drink, may become contaminated with pathogenic bacteria of both respiratory and intestinal origin, derived from patrons themselves or from the restaurant staff. Considering the lack of any proper sanitary control over them, the wonder is that public eating-places have not been incriminated more often as focal points for the spread of infection. Proof of such an origin would in the case of respiratory infections be hard to obtain in view of the multiplicity of other sources. Intestinal infections have from time to time been traced to food-handlers in restaurants, and with extension in the typing of both intestinal and respiratory pathogens the epidemiologist will in future be able to follow infections more often to their source. Cups and glasses, spoons, knives, forks, and plates are all potential vehicles for the spread of infection, and very few restaurants or public bars could satisfy the hygienic standards required to block this particular channel of spread. Although abnormal demands, shortage of staff, and lack of mechanical appliances make it very difficult to effect the necessary reforms in war-time, it will be generally agreed that for æsthetic reasons as well as for protection of the public health satisfactory methods for cleansing and sterilising crockery and cutlery together with a high standard of personal hygiene should be required, and if necessary enforced by law, in public eating- and drinking-places. The medical officer of health and the sanitary inspector now have no real right of entry to catering establishments except to inspect food and its production. The Food and Drugs Act 1938 demands cleanliness of employees in such establishments, as well as of apparatus and utensils, but there is no specific mention, as there is in the United States inspection regulations, of chipped or cracked chinaware, and in effect there is no official supervision of utensils or their cleansing in restaurants.

Much work on the bacterial flora of crockery and cutlery in restaurants and public bars has been done in America, usually by taking multiple swabs from the washed table-ware, and examining for respiratory and intestinal organisms. A common finding has been the atypical coliform *Bact. ærogenes*, which might be used to indicate the quality of dish-washing as typical *Bact. coli* is used as an indicator of water purity. In an investigation of restaurant hygiene in Providence, USA, HORWOOD and PESANE[1] found, inter alia, hæmolytic streptococci in 2 of 184 samples (1·1%) of table-ware, *Staph. aureus* in 5·4%, and *Bact. coli* in 1·6%, while Vincent's organisms and *C. diphtheriæ* could not be recovered from any of the swabs. The investigation was conducted in the summer months and might have yielded a higher incidence of respiratory pathogens in the winter. On another page, LINFOOT records the isolation of *Staph. aureus* from 12, hæmolytic streptococci from 8, and coliform bacilli from 5 of 20 cultures taken from the cracks in cups obtained at various restaurants. Presumably if these pathogens can get into the cracks, they can get out again. His suggestion that the greatest danger from cracked and chipped crockery is the transfer of ulcerative stomatitis may have substance if a virus of the herpes type is a common cause of stomatitis. The spread of Vincent's angina by drinking vessels has often been suggested, but the considerable doubt about the infectiousness of this condition, and the failure to reproduce the infection experimentally in animals, including the monkey,[2] rather negatives the possibility. On the other hand, various detergents have been found not to destroy influenza virus,[3] which, being viable for some time outside the body, may be transferred by unsterilised crockery.

The institution of satisfactory methods of dish-washing should not be difficult. The trouble in most restaurants is that the dish-water is not hot enough to destroy vegetative bacteria, particularly if the washing is done by hand. As a result the dishes are neither properly cleansed nor sterilised. Conditions are much worse in public bars, where glasses are usually given a quick rinse in cold or tepid water containing, perhaps, some magic cleanser. Here the traffic in human saliva and the opportunities for the spread of infection in this way must be considerable. To add to the problem, staff employed in the menial task of dish-washing are often of the lowest grade of intelligence, poorly paid, and woefully ignorant of hygienic needs and standards. But the obstacles to the reform of restaurant hygiene can and must be surmounted. The technique of satisfactory dish-washing is relatively simple. With manual

8. Cournand, A. et al. *Surgery*, 1943, **13**, 964.
9. McFarlane, D. *J. Path. Bact.* 1941, **52**, 406.
10. Scarff, R. W., Keele, C. A. *Brit. J. exp. Path.* 1943, **24**, 147.

1. Horwood, M. P., Pesane, C. P. H. *Publ. Hlth Rep., Wash.* 1942, **57**, 33.
2. Kelly, F. C. *J. infect. Dis.* 1944, **74**, 93.
3. Krueger, A. P. *Nav. med. Bull., Wash.* 1942, **40**, 622.

and mechanical washing of table-ware, the utensils, after removal of food remnants, should first be cleansed at a temperature of 120° F, using an adequate amount of a good detergent; they should then be rinsed for 2–5 minutes in clean water at a temperature of 170° F, allowed to drain and dry without wiping, and stacked, preferably under cover, away from dust and flies. For drinking glasses in bars, after washing in water at 120° F with a detergent, chemical disinfection with chlorine (50–100 parts per million) may be used, followed by rinsing in cold tap water. Such operations should be within the competence of reasonably intelligent, properly instructed, and decently paid staff working with up-to-date equipment and in surroundings pleasant enough to encourage them to maintain the sanitary standards which common decency and the public health demand.

Annotations

THE GOVERNMENT AND MEDICAL EDUCATION

Sir John Anderson, as Chancellor of the Exchequer, has recognised that universities will have to spend far more money after the war, and that a large share of the increase will have to be borne by the taxpayer. The parliamentary report on p. 255 shows that he has accepted the recommendations of the University Grants Committee for the coming two years. Especially notable is the fact that in each of these years the Government will provide £1,000,000 for developments in the medical schools arising out of the Goodenough report, and £500,000 for the teaching hospitals as the Goodenough Committee recommended. "Medical schools and teaching hospitals," remarks the *New Statesman*, "are clearly to be the favourite child of higher education." We must all be grateful to those who have stated so effectively the case for treating them generously.

ANÆSTHESIA IN THE PACIFIC WAR ZONE

GIVING an anæsthetic on the European front within easy supply range of England is one thing. On the Pacific front it is quite another. The distances make the supply of any but the most compact and simple equipment impossible, while the climate largely prohibits the homely "open ether." In any event, neither a jungle battle nor a naval landing is the place for elaborate apparatus needing skilled supervision and a series of cylinders. Ferguson[1] recounts how in his experience with the United States Navy in the early part of the Pacific war skilled anæsthetists were rare, and the anæsthetic chosen had to be one which the surgeon could supervise or give himself to a robust young adult in whom shock was not a prominent factor, and one which was suitable for treating wounds, reducing and immobilising fractures (mostly compound), removing foreign bodies, and performing other operations in a tropical area. Spinal, local, and block anæsthesia, and intravenous 'Pentothal sodium' best fulfilled these requirements.

He regards local anæsthesia as suitable for all patients, not excluding the excitable and apprehensive, provided complete anæsthesia is produced. In only one out of 218 cases of acute trauma did local anæsthesia need to be supplemented with a general anæsthetic. Brachial plexus block was used whenever possible for operations on the upper limb, and Ferguson speaks of it with enthusiasm. This view is in line with a recent revival of interest in England in this procedure.[2] In contrast to general opinion in this country Ferguson used spinal anæsthesia widely for battle casualties, and found it of great value in the difficult circumstances in which the surgical work was done. Severe shock was, however, rare in the casualties in this type of fighting, and when necessary the men were transfused before operation until the hæmoglobin was over 50%. General anæsthesia was used in only 8·5% of 1142 operations, local anæsthesia being preferred by both surgeons and patients. Pentothal in 3·3% solution was the general anæsthetic most used, but it adds to the danger of operations on the tongue and jaw. The danger of respiratory obstruction ever present with an œdematous relaxed tongue and pharynx makes local anæsthesia preferable for these operations. In Ferguson's opinion nitrous oxide and oxygen was the best anæsthetic for incision and drainage of gas-gangrene, but refrigeration was preferred for amputations in this condition. Ice in the necessary quantities was apparently available.

The inhibition of the bacteriostatic action of the sulphonamides by procaine is now well known, and further confirmation of this has recently been published.[3] But Ferguson's clinical impression was that the sulphonamides seemed to be equally effective in wounds whether they were operated on under procaine local anæsthesia or not.

1. Ferguson, L. K. *Nav. med. Bull., Wash.* 1944, **43**, 697.
2. Macintosh, R. R., Mushin, W. W. Local Anæsthesia: Brachial Plexus, Oxford, 1944.
3. *Anesthesiology*, 1944, **5**, 605.

SIGNIFICANCE OF TRANSIENT HYPERTENSION

THE mass medical examinations of men for the Forces have brought to the fore two questions relating to hypertension—what is the upper limit of normality, and what is the significance of transient rises in blood-pressure? The Americans have been assiduous in their efforts to supply the answers. Levy and his collaborators,[4] with the medical records of 22,741 officers of the American army at their disposal, have studied the relation of transient hypertension to persistent hypertension in later life; 38% of their subjects had been under observation for 15–19 years, while 6% had records covering 20 years or more. Their definition of hypertension was a systolic reading of over 150 mm. or a diastolic one of over 90 mm. Hg. Where subsequent readings were below these levels the case was labelled "transient." Transient hypertension was found in all age-groups, its frequency rising with age from 5·9% at 25–29 years to 18·6% at 50–54. At all ages sustained hypertension developed more often in those who had previously shown transient hypertension than in those who had not. The disability-retirement rate with cardiovascular-renal diseases and the death-rate from this group of diseases were also higher in those who had shown transient hypertension. Master[5] examined 50 naval men over the age of 40 years, 1–7 years after a single blood-pressure reading on the borderline of normality had been observed. On re-examination 38 of the series had definite hypertension, the readings often being much higher than the original one. In another US naval report, Rogers and Palmer[6] provide essentially similar data, though they present it rather more optimistically. Of 1574 naval recruits seen in one month, 14% had hypertension at the initial examination, a figure comparable to the 10% obtained by Palmer[7] in 3600 American college men. The majority of the naval recruits with hypertension were in their twenties, and half of them gave a family history of degenerative vascular disease. Rogers and Palmer report a follow-up study of 25 civilians with transient hypertension for periods up to 25 years. The one patient followed for 25 years has developed established hypertension but is symptomatically well at the age of 48; one may have had a posterior coronary infarct from which he recovered; the others,

4. Levy, R. L., Hillman, C. C., Stroud, W. D., White, P. D. *J. Amer. med. Ass.* 1944, **126**, 829.
5. Master, A. M. *Bull. NY Acad. Med.* 1943, **19**, 704.
6. Rogers, W. F., Palmer, R. S. *New Engl. J. Med.* 1944, **230**, 39.
7. Palmer, R. S. *J. Amer. med. Ass.* 1930, **94**, 694.

with the exception of one with pulmonary tuberculosis and one with a psychosis, are alive and well, and half of them have normal blood-pressures. A review of 211 patients with "mild" essential hypertension and 237 with "late" essential hypertension showed that in both groups there was a family history of degenerative vascular disease in three-quarters of the cases. Most of them fell within the fifth and sixth decades. In the "mild" group the mortality at a given moment of follow-up was 6%, practically always over the age of 50; the comparable mortality of the "late" group was 36%, and three-quarters of them died over the age of 50.

The common occurrence of transient hypertension in young men who seem quite well is further brought out by Graham's findings reported in this issue. On account of active service conditions these figures cannot be as comprehensive as those reported from America, but the fact that out of the 33 soldiers noted to have hypertension after a period of hard fighting in North Africa there were 28 whose pressure had returned to within normal limits when they were examined again after 2 months' rest behind the lines suggests that transient hypertension is a common effect of protracted fighting. What deductions can be drawn from these findings? The requirements of the Armed Forces in war-time are relatively simple. A single diastolic reading of over 100 mm. Hg automatically excludes the candidate from active service. Borderline cases may be accepted provided a full examination reveals no evidence of cardiac or renal involvement. The justification for this attitude is that, even though these cases of transient hypertension will probably develop sustained hypertension in the long run, this will not occur until after the age of 40, when a man is of little use for fighting. As a long-term policy this is short-sighted, but any other attitude would seriously jeopardise the manpower of the nation. There seems little doubt that these people with transient hypertension are the established hypertensives of middle age. Provided there is no family history of degenerative vascular disease there is a chance of their evading this fate, but if the family history is tarnished, then the ultimate prognosis—i.e., after the age of 50—is poor. While the pace of modern life continues, prophylaxis does not hold out much promise.

INSPECTION OF FOSTER-HOMES

"The child and the foster-home should each be studied so as to be able to match one with the other. It is not merely finding a foster-home, but finding the right foster-home for this child which will mean success. . . . It is skilled work to make the necessary adjustments between child and foster-home. . . . Specially selected and trained staff is necessary for the task of matching the child to the home, and for the supervision which should follow."—Pamphlet on "*The Care of Children brought up away from their own Homes*," published by the Provisional National Council for Mental Health.

"Almost every case of neglect should be detected either by the health or education services. . . . The first essential of any scheme is that there should be some person on the central staff of the health authority to whom all cases may be reported, who is available for advice, and who can devote a portion of his time to the administration and supervision of the scheme."

Dr. A. E. MARTIN, *Public Administration*, 1944.

WHEN large numbers of children must live away from their own homes, as has happened in this war, there will always be some discouraging examples of neglect and cruelty, either wilful or merely stupid. In generous indignation at these failures the public is apt to overlook the overwhelming proportion of cases in which children are well and kindly cared for. But this does not mitigate the distress suffered by the unlucky ones or lighten public responsibility for preventing repeated failures of the kind. Cruelty turns on forces in human nature which in the home are normally curbed by the parental instinct. Where this strong check is lacking the child needs some other safeguard. Examples of neglect amounting to cruelty can be found in resident homes and nurseries no less than in foster-homes, just as examples of first-class and imaginative child nurture can be found in all these places. We have always held that the best substitute for a child's own home is a good foster-home. But before children are placed in such homes, and after they are there, the homes and the foster-parents must be properly studied by people trained for the job: and the advice of these trained workers must be taken.

In a case now sub judice children had been under the care of a county-borough council since May, 1940, having been removed from their own parents on the ground that they needed care and attention. In July of last year they were sent to live on a farm. Full details of the methods of inspection of the foster-home in this case have not yet been published, but it is reported that on Dec. 20, 1944, a clerk employed by the responsible education committee visited the foster-home after notifying the foster-parents of her visit. She stayed for about an hour and a quarter, but did not visit the children's sleeping quarters. She recommended to her committee that the children should be removed from the foster-home. On Jan. 9 one of the children died and the foster-parents have been accused of manslaughter.

Such allegations are disquieting, and if established in a court of law the lesson they teach will be unforgettable. Authorities entrusted with the care of children have a serious responsibility; if they fail to fulfil it the children bear the brunt of their neglect. Foster-homes are a good solution only if they are properly supervised; and even a bad parent is better than a bad foster-parent.

DRINKING SEA-WATER

IT has been agreed for centuries that thirsty men in lifeboats must not drink sea-water, yet there have been suggestions in both world wars that sea-water could be drunk or taken by rectum with benefit. These suggestions had to receive serious consideration because they were made by scientific men and based on experimental work, and the exact scientific reply was not immediately to hand. Further work [1 2] carried out on both sides of the Atlantic has made the position clearer. Stated in its simplest terms it amounts to this. Sea-water may be regarded as a 3·5% solution of salts. The principal cation is sodium and the principal anion chloride. Magnesium and sulphate are also present in smaller amounts, but these ions are not in themselves toxic when ingested. The human kidney can excrete a urine containing about 2% of sodium chloride but no more, and consequently one of two things must happen when a thirsty person drinks sea-water. He may retain some of the salt. This must be to his disadvantage, for if he is desperate for lack of water his body fluids will already be hypertonic. He may excrete all the salt. Unfortunately he can only do so by drawing on his precious store of body water, and this can obviously do him no good. Interest has now shifted to the actual cause of death when dehydrated persons give way to the temptation to drink sea-water.[3] The work has been done on dogs, and it seems that in the later stages of dehydration the organism does not excrete all the salt in the ingested sea-water. The salt is retained in the extracellular fluids and raises their osmotic pressure so that water passes out of the cells. This leads to an artificial maintenance of the volume of the blood and other extracellular fluids and to a corresponding dehydration of the cells. Hence the animals die with disturbances of the nervous system and respiratory failure while the circulation is maintained to the end.

1. Foy, H., Altmann, A., Kondi, A. (1922) *S. Afr. med. J.* 1942, **16**, 113. Elkington, J. R., Taffel, M. *J. clin. Invest.* 1942, **21**, 787.
2. McCance, R. A., Young, W. F. *J. Physiol.* 1944, **102**, 415.
3. Elkinton, J. R., Winkler, A. W. *War Med.* 1944, **6**, 241.

Much of the work done on dehydration in the last few years has merely confirmed principles which were well established in the past. Thus we have known since the time of Ambard and Papin [4] that there is an upper limit to the osmotic pressures found in the urine, and that consequently the fewer the solids to be excreted by the kidney the smaller the volume of urine a dehydrated person will have to pass. This method of saving water has been brought out again and again,[5] and it is clear that a minimum intake of salt and a diet consisting largely of carbohydrate and fat is the best for lifeboat personnel.[6]

TOXICITY OF DDT

THE remarkable new insecticide, DDT, is toxic to mammals as well as to insects. Its toxic action is cumulative and it can be absorbed through the skin. Smith and Stohlman [7] find that in cats, rabbits, and rats the symptoms of DDT poisoning strongly resemble those of poisoning by phenol, except that the action of DDT is delayed up to several hours and may persist for several days. It causes hyperexcitability and generalised fine or coarse tremors, which end in flaccid or spastic paralysis, with occasional tonic or clonic convulsions preceding death by respiratory paralysis. Examination of the blood by Smith's method [8] failed to reveal significant amounts of either free or conjugated phenols. Smith and Stohlman have evolved a method for estimating DDT in the tissues by means of the five atoms of chlorine which its molecule contains, assuming that the DDT is present in the tissues unchanged. They macerate and dehydrate the tissues with sodium sulphate, and after extraction with acetone determine the chlorine in the extracts. Modifications are necessary for the estimation of DDT in bile, fæces, and urine. This method gave good results when tested by adding DDT to animal tissues, 80–90% of the DDT added being accounted for. When a rabbit weighing 1·8 kg. was given 0·55 g. per kg. of DDT in olive oil by mouth and killed 2 days later, the DDT contents of tissues per 100 g. or 100 c.cm. were: blood 10·7 mg., liver 6·3 mg. kidney 3·9 mg., brain and spinal cord 16 mg., bile 80·0 mg., and urine 16·8 mg. These figures may be 10–20% too low, but they show how the DDT is distributed in the body.

In rats given 1–5% solution of DDT in olive oil into the stomach the LD50 was 150 mg. per kg.; in rabbits it was 300 mg. per kg. Death may be delayed for several days. Woodward and others [9] give rather higher figures for acute toxicity, ranging from 150 to 750 mg. per kg. for rats, mice, guineapigs, rabbits, and chicks. There were some survivals at the highest doses, probably owing to non-absorption. These workers found that DDT dispersed in gum-acacia was decidedly less toxic than in oil solution. The cumulative effects of repeated small doses were studied both by Smith and by Woodward and his colleagues. In both investigations it was found that 0·05% by weight of DDT in the diet was injurious and that 0·1% usually caused death within a few months. Ellis, Westfall, and Ellis [10] have lately demonstrated that DDT is more toxic to goldfish and frogs than to animals. When given food pellets containing DDT dissolved in olive oil, goldfish first became irritable, and then developed muscular incoördination and spasms, and prostration—a picture resembling poisoning by phenol or picrotoxin. The onset of symptoms was sometimes delayed for 4 days or more, and a single fatal dose took anything from 1 to 6½ days to kill the goldfish. The lethal dose ranged from 60 to 200 mg. per kg. body-weight. Frogs given injections of DDT into the dorsal lymph sac were killed in 4–72 hours by single doses of 150 mg. per kg., some dying after as little as 10 mg. per kg.

When applied to the skin in a dry form, DDT causes no toxic symptoms, according to Draize and others.[11] Even 4 g. per kg. of undiluted drug had no effect on rabbit's skin applied externally. In solution, however, it can be gradually absorbed through the skin to give toxic effects. The toxicity was not acute; doses of up to 2·75 g. per kg. dissolved in dimethyl phthalate and other solvents were not fatal. But daily inunctions of 0·5 c.cm. of 30% DDT in dimethyl phthalate caused death to rats, rabbits, and guineapigs after about 30 applications. Higher rates (4 c.cm.) killed these animals after 5–10 applications, though dogs survived such doses for very long periods. Local symptoms were rare, but applications which were eventually fatal usually gave general symptoms (anorexia or tremors) after the first dose.

In spite of the pronounced neurological symptoms produced by DDT poisoning (e.g., tremors, spasticity, terminal extensor rigidity), Lillie and Smith [12] report relatively slight histological changes in the central nervous system. In cats, rabbits, and rats these consisted in vacuolation round the large nerve-cells in the cord and cerebral motor nuclei. In the liver there was a hyaline centrolobular and midzonal degeneration similar to that described in poisoning by azobenzene and some of its derivatives, with a variable amount of coagulation necrosis.

The general impression left by the accounts of these investigations is that DDT is quite a serious poison to small vertebrates. But its toxicity is limited by its poor powers of penetration, and it can only exert its effects when dissolved in oil or various organic solvents. Thus, the statement by Smith that DDT is two or three times as toxic as phenol should be qualified. DDT is so toxic to insects that only dilute dispersions need usually be employed in the field; so the danger to man and other vertebrates is remote. The main hazard seems to be to operators who have to handle concentrated solutions.

FEATHERS FOR THE NEST

ON St. Valentine's Day Sir William Jowitt, supported by Mr. Attlee, Sir Archibald Sinclair, Mr. R. A. Butler, and Mr. Ernest Brown, presented a Bill to "provide for the payment by the Minister of National Insurance from the Exchequer of an allowance for each family at the rate of 5*s.* for each child except for the first or only child." The allowance will be continued, provided the child is still at school or an apprentice, till he is sixteen years of age. Though either parent may draw the allowance, it is, according to the Bill, legally to belong to the father. In practice, however, the mother will usually spend the money; and since she has to do the job we still think it would be more sensible to give the tools into her own hands.

The Government Actuary estimates that there are over 2½ million families with two or more children, and that the scheme will cost about £57 million during the first year. Children for whom orphans' pensions are paid are excluded, and adjustments in the allowance may be made where supplementary allowances or grants "under provisions relating to the Services, war injury, policemen, and firemen" are already being paid. Such exceptions, and the decision to make the cash allowance 5*s.* instead of the 8*s.* recommended by Sir William Beveridge, will naturally cause some disappointment; but the great thing is to have called the allowances into existence. It will probably be easier to increase them and widen their scope than it has been to achieve them.

4. Ambard, L., Papin, E. *Arch. int. Physiol.* 1909, **8**, 432.
5. Gamble, J. L. *Proc. Amer. phil. Soc.* 1944, **88**, 151.
6. See Editorial, *Lancet*, 1944, ii, 601.
7. Smith, M. I., Stohlman, E. F. *Publ. Hlth Rep., Wash.* 1944, **59**, 984.
8. Smith, M. I. *Ibid*, 1933, **48**, 1487.
9. Woodward, G., Nelson, A. A., Calvery, H. O. *J. Pharmacol.* 1944, **82**, 152.
10. Ellis, M. M., Westfall, B. A., Ellis, M. D. *Science*, 1944, **100**, 477.
11. Draize, J. H., Nelson, A. A., Calvery, H. O. *J. Pharmacol.* 1944, **82**, 159.
12. Lillie, R. D., Smith, M. I. *Publ. Hlth Rep., Wash.* 1944, **59**, 979.

COURAGE

LORD MORAN'S *Anatomy of Courage*[1] is an essay on the nature of courage in fighting men, illustrated by a diary which he kept as a battalion medical officer in the war of 1914–18. Those who shared his experience will relive the familiar scenes here described with artistry and insight. He brings back that torn countryside of death, with its muddy trenches gashing the soil, the slippery steps into dark damp dug-outs, lit by the guttering candle so often snuffed by the blast of shell-fire. The reader almost feels anew the pitiless rain and the searching winds of the rolling country of the Somme; the familiar smells of Maple Copse and Delville Wood steal once more into another war-time air. A nostalgia for departed youth will descend, not unpleasantly, on many an ageing man who thirty years ago was living the hard and selfless existence of a battalion "MO." Lord Moran does more than paint the sombre battle country; he gives us glimpses of villages behind the lines, of those wonderful periods of leisure, of deep sleep between sheets, of old people and children gathering at the cottage doors to smile wistfully at the departing men when the end of rest inevitably came and singing soldiers took their way back to their calvary beyond the golden corn. He gives us brilliant portraits. And like a thread of silver running through the narrative the medical reader can trace and appreciate the anxiety of the doctor for his men, can sense something of the service given to them, and something, too, of the pain with which he sometimes had to harden his heart and send them back to their duties.

In the analysis of courage some perhaps may feel that Lord Moran has a less certain touch. Often he shows an almost uncanny understanding of the discontents of fighting men and their sources; yet elsewhere there seems to be a sudden failure of appreciation of a soldier's inner thoughts and fears. Describing the battle dreams of nearly all fighting men, he rightly insists that "we cannot cleanse our thoughts of fear by repression of the doubts and hesitations which 'occupy and mock the minds of men' in war." Thus and in many other vivid phrases he shows his remarkable insight into the war disorders of the mind. But many will question his view of death in the field as "a fine free setting forth . . . which comes to a man in the spring time, before age and disease have soiled his body and the traffic of cities stained his soul." Such a view is not likely to appeal to a young soldier; indeed it is probable that he would have a word for it in lively disagreement. "Whom the gods love die young" is surely a resigned and tame negation of all that a doctor should stand for. On another page Lord Moran portrays a good soldier shaken into a stupor by a near miss, and concludes: "When this sort of thing happens to a good fellow it is final." This again seems unjustifiably hopeless in a therapeutic sense. In this war the sergeant would retire to a Corps exhaustion centre little further away than the transport lines of the old war, and would have a very good chance of returning to his work in a fortnight. Instead of which, in the old war, "he must be hurried away to a shell shock hospital with a rabble of *misshapen creatures from the towns*." This was an extract from the diary, and it may well be that it does not express Lord Moran's present views. It is not always the townsmen who break in war. Indeed, it is certain that neurosis and delinquency are highest in units in which intelligence is lowest. Such units are to be found among countrymen, especially when composed of men drawn from rural areas in which inter-marriage, bad housing, and mental deficiency are indigenous. Surely the Cockney soldier is of historic stout heart, and what of the Clydeside battalions from Glasgow?

"Courage," writes Lord Moran, "is a moral quality." Later he writes, "Courage is will power." These two statements are bound to have great weight coming from such a source. There is obviously much truth in both; yet we cannot help reflecting that Lord Moran writes too exclusively of courage as seen in war. The idea that courage is will-power is one that has been strongly stressed by the psychological department of the German High Command, which is much interested in the readiness of the soldier to apply his will to military acts. But courage is a living function of a man's mind, and can be found in all sorts of situations apart from those of war. Thus there is the courage of the conscientious objector, of childbirth, of the conference chamber, of the cat burglar playing with discovery and sudden death as his stakes. And there is an amazing courage to be seen even on the scaffold. It is true that will-power must enter into many of these examples, but the derivation of all of them from moral qualities is more questionable. Such conceptions as these merit our careful attention, and discussion is likely to be exhaustive among readers of the *Anatomy of Courage*.

As for the future, Lord Moran points out that "when an army is being trained to fight it must begin by weeding out those whose character or temperament makes them incapable of fighting." This is the very kernel of military mental hygiene. He insists that this is not possible as a result of a brief interview by recruiting boards; a careful process of combined testing and observation is what is necessary during the early days of training. This is a matter for scientific medical and psychological investigation, which is already established in the Services and is producing clear results. For the future holds a desperate need for high intelligence, to be used wherever it can be found. It is all too scarce, as Lord Moran hints. The mechanisation of war means that heavy demands are made on the more intelligent for the manufacture, maintenance, and care of a legion of mechanical contrivances, which inevitably means that an ever smaller proportion of man-power is available for the actual fighting, whether on land, at sea, or in the air. Yet the less intelligent can be used if properly placed. That will be the task of selection procedures.

The book ends with a chapter on leadership; and the reader is left with an urgent sense of having to read the whole again. It expresses the author's pride in his country's fighting men, his devotion to the soldier in his trials and triumphs, and his bitterness for him when folly and the pursuit of ease have deprived him of the right equipment and the right leaders. In reading its burning and burnished English, we are tempted to modify a sentence of Christopher Morley's: "Every soldier has his own private crown of thorns; but what matters is whether he can wear it over his ear." That ability the British soldier has possessed for centuries; but one day he will ask who places the crown on his brow every time he must march to war.

1. The Anatomy of Courage. By Lord Moran, MC, FRCP. Constable. Pp. 216. 8s.[1]

HOSPITAL FOOD

A leading article and three special articles on this subject appeared in our columns last month. A number of readers have asked us to supply copies for distribution to hospital committees and others interested. Accordingly we have reprinted the articles as a small booklet which is obtainable from THE LANCET Offices, 7, Adam Street, Adelphi, London, WC2, price 6*d*. (postage 1*d*.).

A BRITISH COUNCIL FOR REHABILITATION has been formed, which aims, inter alia, at securing the active coöperation of commerce, industry, and professional bodies in the problem of resettlement. Mr. H. E. Griffiths is chairman of the executive committee, whose members include Mr. E. S. Evans, Dr. F. R. G. Heaf, Dr. Donald Norris, and Dr. F. S. Cooksey.

Special Articles

THE WOUNDED IN THE LOW COUNTRIES AND GERMANY

FROM OUR SPECIAL CORRESPONDENT

(*Concluded from p.* 220)

A new type of hospital has come into existence during this war. This is the 200-bed general hospital, which combines the services and the amenities of a base hospital with great mobility, and takes up a position, in relation to the fighting, which is geographically much the same as that of the casualty-clearing station. Its function is, however, different from that of a CCS, for it is a holding hospital. The period for which cases can be held varies very much, according to the operational position of the troops in whose area it stands. And in a time of emergency it may act very much as a CCS.

A Mobile General Hospital

The hospital I visited was the first general hospital to be set up in France, on D-day plus 3, about a mile from the Normandy beaches and not very far from Bayeux. Its next move was to Falaise. Another of the operations in which it assisted was that of St. Hubert and St. Vith. In the early days of the campaign in France the daily turnover of admission and discharges was very high indeed.

The hospital had often had to make long jumps from one site to another, the longest to date being from Amiens to a town between Louvain and Hasselt. And the fact that a 200-bed general hospital exists which can make these rapid moves is in the present conditions of warfare a useful asset.

To make rapid moves possible the detail of packing and transport has had to be thought out to the last packing-case, and as it is essential that movement should be possible by night or by day, in darkness or light, the marking of each case has had to be so contrived that it can be identified by touch. This has been done quite satisfactorily by a system of raised markings, which one recognises easily, whereas incised markings proved difficult and unreliable. The amount of lorry transport required is about twice that used by a CCS, and the men who accompany the lorries and pack each of them are the men who as a rule handle the equipment in the wards, operating-theatres, stores, and other departments. The most difficult part of the packing and removal is that of the well-equipped laboratory, and this takes time. But if need be, enough of the hospital to enable it to undertake acute surgery can be ready to move in two hours, and it can open in two hours when the move is completed. After moving, the hospital can have 150 beds working in twelve hours.

EQUIPMENT AND STAFF

This hospital has sheets on the bed and full-scale medical comforts, and broadly speaking it functions like any other general hospital. Its medical staff includes a surgical specialist, and it can have as many surgical teams attached to it as may be required; during the campaign as many as seven teams have been attached at one time. There is also a dental officer with a laboratory for making dentures, and a specialist in mechanical work who has about twenty years' experience. There is a specialist in ophthalmology, and a technical assistant with a full range of lenses and frames who can fit almost any kind of spectacles within an hour. The pressure on both the dental and eye services is heavy and continuous. The hospital carries a staff of matron, assistant matron, and twenty sisters.

A feature of this hospital, as of other medical formations which I saw, is that it has in its establishment a force of three padrés. They represent the Church of England, the United Board (Nonconformist), and the Roman Catholic Church. Everyone to whom I spoke had only the highest praise for the padres' work, and several people approached me to draw attention to the valuable services they perform both in action and in the wards. The padres seemed to be an integral part of the hospitals or other medical arrangements I visited, in the same way as the medical officers. And this is a change from what was my experience in the long-ago war of 1914–18. It is perhaps symptomatic of a still bigger change in the Army organisation; for all services, all troops, all forces seem to pull together better and more understandingly than they did in that ancient period.

Besides the surgical, dental, and specialist ophthalmologist, the hospital also carried a medical specialist, a radiologist, and an expert in anæsthetics. Anæsthesia is, I was told, largely induced by 'Pentothal.'

The pioneering work of this hospital was done in England before D-day, by the present commanding officer. That is, the pioneering work of its organisation. To arrive at the detail of a war establishment and to cover every detail of transport and packing was the work of this very hard-working enthusiast. Without danger to the war effort it may be revealed that before the war he was a general practitioner; though he also knew the importance of being a soldier for purposes of military medicine, and much of his training was got in a field ambulance.

A department of the organisation in which rigid economy had been exercised was that of administration, represented by a quartermaster, a company officer, and the commanding officer himself. And that was the whole staff. At the time of my visit the CO seemed to be carrying out most of the administrative duties himself, owing to the absence of others on leave. But it is an understood thing in the hospital that any officer may be called on, in emergency, to discharge any function. Much of the success of this particular organisation must be put down to the drive and initiative of its commander.

RELATIONS WITH CIVILIANS

Among other things, the hospital has the happiest and most cordial relations with the people of the little Belgian town where it was situated at the time of my visit. The children of the schools collected—and in these days it is a matter of very great difficulty to do so—no less than 500 fresh eggs for *les blessés*. The townspeople, I was told, were almost embarrassing in their generosity. Someone would suddenly arrive, deposit a present of fruit (Belgium is rich in apples) or something else, utter the words *Pour les blessés*, and disappear without leaving name or address.

The particular town in which the hospital was standing was in an agricultural area, where eggs and other goods can be obtained, as is not the case in most parts of the country. Belgium as a whole is suffering severely from shortages, and food of all kinds is very scarce.

The hospital reciprocated the kind actions and generous feelings of the townspeople by arranging a Christmas party and giving presents to children and to patients. But the CO had a real problem with the givers of presents to the hospital, and solved it by printing a card from "The Officer Commanding, Officers, and Men of the Military Hospital, X" thanking all for their gifts and inscribed with the name of each person to whom it was addressed. Among both British and Belgians there will be pleasant memories of the hospital's stay in this little town.

Comparisons with 1940

The base medical arrangements of the British Liberation Army in 1945 show interesting differences compared with those of the first armies in France during 1939 and 1940. When I visited GHQ at Arras in May, 1940, and toured the then static front along the hypothetical

Maginot Line—a few concrete positions and a lot of anti-tank ditches, slit trenches, and barbed wire—I found that there was a definite hangover as regards organisation from the war of 1914–18. The conception of mobile warfare was, as it were, diagrammatically represented on maps; but the physical possibility of mobile warfare, in the sense of masses of transport, armoured fighting vehicles, and fighter and bomber planes, was more potential than actual. And when I saw field ambulances and casualty-clearing stations installed with heavy equipment in permanent buildings I was moved to ask: "And how do you move?" I received a reasoned reply to my inquiry, although in some cases in May, 1940, it had begun to seem hypothetical that any move would occur. But the fact remained that field ambulance and CCS were still operating with very heavy loads of medical and Ordnance equipment, and the transport to carry it was not readily available. There was also the immense medical base at Dieppe, with stores, hospitals, and more stores, and more hospitals. The Germans who captured it later could give a better description of it than I, because they got there before I did; and indeed I never saw it. Unfortunately Hitler had conceived the idea of visiting Holland, Belgium, and France with his armies just at that time. These armies were highly mobile and there was no deficiency of either fighter or bomber planes.

The spirit of our armies was excellent at this pre-Dunkirk period; the medical organisation was very good too, but overweighted by past experience and past war establishments. Already we had at that period a blood-transfusion service with its headquarters in England, where it still remains. Already there were being worked out plans for "defence in depth" and the mobile warfare which that means. But the medical services had still to get the training of the desert and other campaigns, and the other forces and services of the Army had still to catch up with the organisation and equipment already developed in the German armies. What is notable now is that while the medical services have had to cut down weight carried in their mobile formations—field ambulance and CCS for example—and have acquired transport to make them fully mobile, they have not had to change fundamentally.

The medical service has developed the paratroop field ambulance which is specially equipped for its odd method of arriving at the scene of action. But the function of the "para" field ambulance is essentially the same as that of any other field ambulance, adapted to the conditions which may necessitate surgical cases being held for days beyond front-line positions. The light field ambulance has been developed to meet the needs of armoured formations, but it is still a field ambulance. And so it is with all the branches of the medical service. The use of surgical teams in advanced surgical units has arisen out of the conditions of mobile warfare. The use of penicillin is the gift of Providence, neither foreseen nor hoped for, and this has led to one of the most important changes of treatment during the war. The advance in neurosurgery and faciomaxillary surgery are logical developments of last-war experience and of clinical developments in the inter-war period.

CHANGED BASES

Big changes have been brought about in base hospital arrangements by two factors: (i) the decision, taken before the war as a result of far-sighted strategy, to create an Emergency Medical Service out of the voluntary and publicly controlled civilian hospital and medical civilian services of Great Britain; and (ii) the development of our air power and the increasing use of air transport. The base of the operations of the medical services of the BLA since D-day has no longer been in France or Belgium but in Great Britain. This has saved the use of an immense amount of shipping space in carrying stores and equipment of all kinds to the Continent.

The base hospitals for the BLA now existing in France and Belgium, and soon possibly to exist in Holland and Germany, are advanced base hospitals with advanced supply depots.

This development would have been impossible but for our increasing predominance in the air and the increasing availability of air transport for medical services. Almost a third of all casualties are now evacuated by air from the BLA to Great Britain, and the proportion is likely to rise. This line of evacuation by air to Great Britain will become still more important as the line of communication lengthens into Europe. And the longer the line of evacuation the greater will be the proportional saving in the transport of medical stores and equipment. It looks as if the big changes already brought about by air evacuation of wounded in the BLA field of action may have important lessons for the war in the Far East, where distances are even greater.

Advanced Base Hospitals

The large general base hospitals which I saw in the towns of Belgium and France were singularly lucky in the buildings in which they were situated. One building had been erected for a hospital by the Belgians before the war, and was complete but had not been opened by them when the Germans arrived. The Germans opened it and when we occupied the town later we took over from the Germans. It is a tall building, spacious, well lighted, and well equipped. Running from the floor up to the top story is a continuous curving ramp which takes the place of stairs, and up which you could drive a small car. In this hospital first-class neurosurgery, faciomaxillary surgery, and chest surgery are being done, as well as other work of a great surgical centre.

Another building taken over was also occupied by the Germans, and they had left there a large number of their own wounded in very bad condition. The Germans are not using penicillin, and they give blood by direct transfusion instead of our own more highly developed and superior method. So septic were some of the cases that a German nursing sister who volunteered to give blood to a gravely wounded soldier—the operation being carried out by the German personnel—developed acute septicæmia in two days. She was saved by British treatment. The large quantity of instruments, dressings, and apparatus the Germans left behind them, as well as the orderlies, nurses, and doctors (some apparently with only three years' training) throw an interesting sidelight on the qualities and deficiencies of the German army medical service.

Evacuation and Convalescence

The base hospitals in France and Belgium are admirably equipped, and capable of giving any kind of treatment required. They do not hold their patients as long as the EMS hospitals in Great Britain—although they have every facility for doing so—because they are part of the operational set-up. To these base hospitals the CCS and hospitals in forward areas clear their casualties, and for the reception of these casualties accommodation must always be available. But this group of base hospitals, distributed over a wide area, acts as a cushion to take the pressure from the front-line areas. And this group of base hospitals is linked up by lines of air and sea evacuation with Great Britain. The necessary air-field and ports are there, and can if necessary be greatly extended. The transport planes are there, and also the hospital carriers and hospital ships. I saw an ambulance train go out from a base in Belgium to the coast, and it was well equipped except that it had supports for stretchers instead of bunks. It had food, medical attention, nurses, and orderlies on board, and it had the certainty of arriving at its port of disembarka-

tion and of sending its wounded on by carrier to arrive in Great Britain in scheduled time.

Excellent as air evacuation is, it is more liable to interruption than evacuation by sea—most often by reason of bad visibility at one or other end of the journey. The ambulance train I saw off on its journey to Great Britain took a collection of men who had been waiting for air transport for two days.

Many patients who recover quickly from wounds or illness do not need to be evacuated to Great Britain. For these men and women there are good convalescent arrangements. If some of the people who object to the ATS going overseas could see the arrangements made for their medical care—and for their recreation and short leave—in France and Belgium, they might take a different view of the subject. The French and the Belgians—and our own troops are largely in contact with the Belgians—are exceedingly friendly. In France and Belgium we are in very friendly territory indeed.

If an ATS is ill near Brussels with some minor trouble, such as a bad cold, there is first-class accommodation where she can stay and recuperate for a few days in pleasant surroundings. I saw two of these places where girls were kept for a few days; they were cheerful and warm and the girls were very well looked after. I also saw two convalescent homes—one for men officers and one for women officers—in beautiful country near Brussels; my only criticism is that the conditions were so comfortable as to tempt the patient to try to prolong his stay. And while I was in Brussels I learned that a large convalescent home for ATS other ranks was being opened under similar conditions in a large building, well equipped in all ways and having in addition an excellent gymnasium.

The two convalescent homes I saw—and at one of which I lunched very well—were being run by the British Red Cross and St. John Organisation and there was a pleasant homelike atmosphere about them. The ATS other ranks' convalescent home is in the same district as the other two—a lovely country district amid woods which will be beautiful in spring and summer.

Achievements of the Medical Services

The Army medical organisation in 1940 had already reached a high standard, and the health of the troops was very good. Developments since then, in all branches of the work of an army, have thrown a tremendous strain on the officers and men, but the standard remains high.

To compare conditions in 1945 with conditions in 1915 is to realise what great advances have been made in simple hygiene, and what great changes these advances have made in the sickness-rate and the level of health.

There is still mud in Flanders, and there is much on the borders of Belgium, Holland, and Germany. But the mud does not pervade the soldiers' lives as it did in 1915. The soldier moves more from place to place; he has more use of transport, and is better supplied. Also the mobile bath units in the fighting areas enable him to keep clean to a degree undreamed-of in that earlier war.

Louse infestation and scabies on the scale common in 1915 are unknown. They are now rarities, not commonplace. And with them have gone a mass of skin infections. The soldier of today knows a great deal about how to keep himself well; he has an idea of "positive health," of keeping fit, which is higher, much higher, than in 1915.

The preventive services of the Army have protected him against tetanus so that, if not unknown, it is now a rare disease. In 1914–15 there was often no tetanus antitoxin available for acute cases, and there were many acute cases; in 1945 the universal immunisation with tetanus toxoid has prevented the tetanus occurring at all.

Epidemics—typhoid, cerebrospinal fever, and so on—just do not exist, and the ordinary sick-rate from illness is not a high one, because general health conditions are good. The preventive and hygiene services of the Army have done a magnificent job.

SURGERY

The treatment of surgical casualties has been revolutionised by (i) the rapidity with which first-aid is brought to the wounded and their speedy removal from the field, (ii) the bringing of surgical specialist assistance to the wounded in advanced positions and shortly after the time of wounding, (iii) transfusion with blood and other fluids soon after wounding, and (iv) the use of penicillin and other modern chemotherapy. This surgical work is done in very advanced positions when necessary; but for a large number of casualties such early advanced surgery is not necessary. Many cases are, of course, "walking wounded" and with appropriate treatment are able to resume duty quickly.

For severe surgical cases there is every requisite facility for further treatment in the advanced base hospitals, as I have called them—that is the large general hospitals of the BLA in France and Belgium. There is, so far as I know, no kind of case which cannot be dealt with in the general hospitals if the condition of the wounded man demands it. But for operational reasons it is clearly better to send cases needing prolonged and continuous treatment back to the United Kingdom.

The proof of the pudding is in the eating, and the proof of the efficiency of the medical services of the Army is in the very high recovery-rate of all casualties, medical and surgical.

FINAL IMPRESSION

From the fighting line to the great modern hospitals at the base of the BLA, the medical services work as one integrated coördinated and smoothly moving organisation. They have first-class medical, surgical, and other specialists, and eminent consultants whose work during the war has added largely to their experience. They have also a team of medical officers with units, with field ambulances, with CCS's, and with other hospitals, who have learned their work in years of war. They have experienced staffs of sisters and of trained hospital personnel. And with the combatant units and field ambulances there are MO's and other ranks, many of whom are veterans of several campaigns during the war.

The medical services have at all the places I visited the happiest relations with other branches of Army administration. Their importance in ensuring the fitness of the soldier is better understood by the non-medical services than it has been hitherto. This integration of fighting forces and ancillary services together in the BLA, this understanding and appreciation of each other's problems, this mutual confidence one in the other, is much greater than it was in 1914–18. Medical services and fighting forces are in this war, it seems, raised to a higher level of efficiency. The cause for which we are fighting is better understood than the cause we were fighting for then. And because of these things the morale of the Army is very high. The men I saw on my visit to front-line positions in Belgium and Holland and Germany were "on their toes" for the fight in which they are engaged.

MORE PHARMACISTS.—At the end of last year there were 25,285 persons on the register of the Pharmaceutical Society of Great Britain, compared with 25,224 the year before. The total includes 4471 known to be serving with HM Forces. Since 1900 the number of pharmacists has increased by 10,000, and it is now 1 per 1800 of the population. The percentage of women pharmacists is 10·5, and last year 52% of the entrants were women.

SCIENCE IN PEACE

AT a conference held last weekend in London by the Association of Scientific Workers Prof. J. D. BERNAL, FRS, said that the standard of life in this country in the next few years would largely depend on how adequately and intelligently science is employed in industry. "In the past industry has too often been regarded as a means of producing cheap goods in large quantities irrespective of the uses and quality of the goods and of the lives of the workers who produce them. The modern aim for industry is to satisfy the needs of the consumers—that is, of the whole people—and at the same time provide them in their working hours, no less than their leisure, with the possibilities of worthwhile and interesting lives." This required the deliberate thinking out of industrial techniques and the application of science to them at every step.

Mr. HAROLD ROSE held that the outstanding social and political problem of the day was housing. Millions of homes would be required within the next few years, and the building industry must be reorganised and modernised to produce them efficiently and economically, utilising the large potential capacity of the engineering and aircraft factories. Traditional building methods must be supplemented so as to take every advantage offered by prefabrication. "Prefabricated" did not mean "temporary." Prefabrication was nothing more than the application of factory methods to building construction, so that the greater part of the normal site operations was carried out in the factory. At least six tons of water was used in the construction of a normal brick house, all of which had to dry out before habitation; prefabrication implied dry assembly, so that houses could be occupied immediately. Complete plumbing systems and kitchen fitments could be factory-assembled, and the whole connected up in the house in a matter of hours. Mass production, through standardisation, would reduce costs and make possible a high standard of quality and design. "If we seriously set our minds on getting millions of houses by non-traditional methods," said Mr. Rose, "they can be produced."

Speaking on health, food, and agriculture, Mr. F. LE GROS CLARK suggested that one of the first measures taken after the war should be to revert to first dietetic principles and get back to protein. It was in protein, and especially protein of animal origin, that the world's population showed the most obvious deficiency; and this deficiency had become serious during the war. It would take some time to raise the proportion of animal protein in the diet of about half the human race. But it was possible to expand the cultivation of the soya bean and other leguminous crops, and to produce strains with a higher protein content, while the extraction of protein from green leaves and the use of yeast should also be investigated. Secondly it was necessary to develop the breeding of good dairy cows, adapted to the purposes of every type of community, climate, and fodder. And thirdly, the potential harvest of the seas and inland waters must be explored: in many parts of the world the food resources of the fishing areas were relatively unknown and no measures had been taken to increase them and make them available. "We have become aware of the nature of protein deficiency in the course of the war," said Mr. Clark: "we have turned this island into a small experimental field for the raising of our available protein supplies. What we have apparently forgotten is that our trivial war-time deficiency or near deficiency is small in comparison with the protracted protein deficiency of half the human race. What we have to do is to turn from the pioneer or experimental stage to the large-scale application of method to every part of the habitable globe; and that will require a great team of biochemists and agronomists." A beginning should, he thought, be made with an intensive study of the technology and economics of food distribution and transport, and of the type of administrative machinery required to relate production more and more closely to human needs. Special attention should be paid to the stage between production and consumption—i.e., transport, storage, and distribution. "It is here that we are most ignorant, and it is here that we are likely to realise the largest reductions in the final price."

Dr. HORACE JOULES maintained that though enormous scientific advances have been made in medicine during the past 40 years, the people have failed to benefit from these advances owing to the lack of development of the medical services in this country. "Private interests should not be permitted to prevent the full development of a National Health Service, and we ask that medicine be removed from the market-place."

REMUNERATION OF PRACTITIONERS

PURSUING their plan outlined last summer (*Lancet*, 1944, ii, 223), the Minister of Health and the Secretary of State for Scotland have appointed a committee to recommend "what ought to be the range of total professional income of a registered medical practitioner in any publicly organised service of general medical practice . . . with due regard to what have been the normal financial expectations of general medical practice in the past and to the desirability of maintaining in the future the proper social and economic status of general medical practice and its power to attract a suitable type of recruit to the profession." The members of the committee are:

Sir Will Spens (chairman), master of Corpus Christi College, Cambridge; Dr. J. A. Brown, Birmingham; Dr. O. C. Carter, Bournemouth; Mr. E. Davies; Sir Ernest Fass; Dr. W. M. Knox, Glasgow; Mr. T. Lister; Mr. J. L. Smyth; Dr. S. A. Winstanley, Urmston.

Sir Ernest Fass is a former public trustee, Mr. Lister an accountant, Mr. Davies a solicitor, and Mr. Smyth secretary of the social insurance department of the Trades Union Congress. The medical members, who are all general practitioners, were nominated by the British Medical Association. Mr. H. F. Summers, of the Ministry of Health, and Miss A. V. Kelynack, MD, assistant secretary of the British Medical Association, will act as joint secretaries to the committee which may be addressed at the Ministry of Health, Whitehall, London, SW1.

WAR INJURIES COLLECTION

AFTER the destruction by enemy action in 1941 of the Army Medical War Collection housed in the museum of the Royal College of Surgeons, the Medical Research Council accepted a request from the War Office and the Royal College of Surgeons of England that they should assist with arrangements for forming a comprehensive National Collection of pathological specimens, photographs, and drawings of war injuries, which would serve both for teaching purposes and as a permanent record of the types of injury sustained in the present conflict. A special subcommittee of the Council's War Wounds Committee was appointed to direct the scheme; this subcommittee includes nominees of the three Fighting Services, the Ministry of Health, the Department of Health for Scotland, the Royal College of Physicians of London, the Royal College of Surgeons of England, and the Ministry of Pensions. The arrangements for the collection were entrusted to Dr. Joan Ross, who is acting as temporary curator.

A large number of specimens has now been accumulated, and by permission of the Royal Society of Medicine an exhibition of a selection of these is to be held in the society's council room at 1, Wimpole Street, London, W1, from Monday, March 5, till Friday, March 9, from 9 AM until 6 PM, both days inclusive. It will be open to all members of the medical profession, but not to the general public.

The exhibition will consist mainly of specimens, photographs, and drawings of wounds sustained in the land fighting in Italy and north-west Europe, which have been collected with the coöperation of the Army Medical Department. It will include museum specimens collected by Dr. Ross; coloured photographs by Mr. P. G. Hennell (by courtesy of the Metal Box Co., Ltd.); and drawings by Mrs. M. L. Wright and Mrs. Ehrenborg. It is hoped that all medical men or women having specimens of relevant interest to offer to the National Collection will communicate with Dr. Ross, Science Block, Mill Hill School, NW7 (Mill Hill 3640). It is intended that after the war the specimens collected shall be distributed to appropriate museums and teaching institutions.

In England Now

A Running Commentary by Peripatetic Correspondents

To the social historian of today I commend the advertising columns of the *Times*. Here he will find a reliable mirror of the habits and customs of our people—the monetary value they attach to their goods and chattels, the names they give their children, their mourning habits, the vagaries of charitable appeals. A striking feature of the *Public Appointments* column these days is the demand for hospital dietitians. Unless there has been a sudden rise in their occupational mortality our hospitals have taken very much to heart the strictures being passed on their catering habits. There is a curious variety in the titles of these posts. In one recent issue there were three such advertisements: one hospital wanted a "dietitian," another a "food supervisor and dietitian," and the third a "lady kitchen superintendent." A few days earlier a Lancashire hospital had been advertising for a "food supervisor," and that sounds to me the best name. Having spent part of my school-days in the Palatinate, I have always retained an affection for this hard-headed, plain-speaking county where spades are spades. What other title would fit the official responsible for preparing menus of hot-pot, tripe, pig's trotters, and eccles cakes, varied occasionally with fried fish and chips, not to mention that most delectable of cheeses that even in the days of peace was well-nigh unobtainable in London? No lady kitchen superintendent could produce that dream of a hungry man, a Lancashire hot-pot; not the miserable apology that passes for such in the south, but the real thing that stars at hot-pot suppers. And "dietitian" suggests illness, calories, vitamins, and the rest of the scientific or pseudoscientific jargon of this new science of nutrition. We are at last realising that our patients' well-being depends as much on the taste, serving, and variety of their food as on its scientific analysis.

* * *

I was rather surprised and pleased, when my WAC (I) staff-sergeant handed me an invitation to her sister's wedding, for our opportunities of seeing Indian domestic life are limited, and a uniform acts as a kind of negative passport. The invitation itself was a notable document, not only containing time and place but also placating the curious by giving the occupations of the bridegroom and the bride's parents. The reception was held in a small room, with rows of chairs like a classroom or political meeting, and on a sofa opposite the door the bride and bridegroom, heavily garlanded and prepared to face all comers. I committed the solecism of shaking hands with the bride as well as the bridegroom, which is apparently not done, though it is pardonable in an ignorant foreigner. After our entry we sat down, and just went on sitting down for half an hour, while later arrivals came in, and a gramophone played what I am told was wedding-music. This was a trying time, as readers of Beverley Nichols's remarks on Indian music will realise. I was then asked if I would "take a little lunch," the time then being 7 PM Indian standard time, and we went into a small room where a table was laid for twenty people. "Laid" is perhaps an exaggeration, for there were only brass plates, on a scale of one per guest, each plate containing some highly spiced nuts, a sickly-sweet doughy ball, not further identified, and a banana, bursting at the seams. The nuts were very hot, and I longed for some *pani*, but all I got was a cup of very sweet coffee. After we had plied our fingers sufficiently, a cloth was passed round with which to wipe them, and I suffered by being low down on the rota. I asked my VCO, who was next me, what happened next, and to my dismay he replied "seats are now resumed." I dreaded a further session of gramophone music, but to my relief we passed the door leading back to the reception-room and went out by another door, where we fell into the hands of what I can only describe as an assembly-line of ushers, modified for India. My first intimation that anything was amiss came when the first usher poured scent over my hair, which is not used to such treatment. The second man decanted a brown fluid, said to be sandal-wood emulsion, over the back of my right hand, using a small ladle. The third dabbed a few minims of attar of roses on the same place; the fourth handed me a small bouquet "to take away"; and the fifth gave me a cocoa-nut. Then we were released. Later on, as I attempted with indifferent success to remove scent from hands and hair, I decided that I was glad to have seen an Indian wedding, that I was grateful for my hosts' kindness, but that in future I would take the advice of Virgil—*Ex uno disce omnes*.

* * *

Last week I saw a charming lad of 20, but he was an enuretic. He had seen dozens of doctors since early childhood and some of his phrases came out so pat that he was obviously telling an oft-told tale. He had been a stammerer as a boy, but had got over that. Two points in his story struck me: one was that he was a very deep sleeper and an alarm-clock even by his head was no use; the other was that when he was living alone in a shack, doing his own cooking, bedmaking, and laundry—i.e., going to bed without fear of enuresis and its unpleasant consequences—he had six months' freedom from it, whereas now it occurs twice a week. He was in his public school fifteen, but was a day-boy. I wish I could have helped him more than I did, as he seemed to have all the healthy instincts.

The last case before this which I encountered was over a year ago, a child of 10 who was sent to see me alone. After considerable denial on his part and persuasion on mine (2 Mars bars) he did admit that he was sometimes aware that he was passing water in bed. Then I got a lovely spontaneous sentence from him—"It feels like sliding down hill"—obviously, my dear Watson, the pleasure bribe to the infant to empty his bladder being translated into the swinging-riding sensations so attractive to childhood. I had heard he had marine aspirations, this boy, so I painted him a rather glowing picture of sea life—God forgive me—in which he and the Captain played decisive parts, an alluring picture in which wet beds were unthinkable, since when save for one night in an air-raid he has been dry. But we see so few cases that we are apt to fall into the *ab uno disce omnes* heresy. That's the worst of being a GP.

How much more fortunate is my colleague who is chairman of a medical board! He says he has seen dozens lately. A recruit will sail through his examination, but when he comes up to the chairman and is asked if he has anything to say, out comes his "No, I am very fit, but since I was a boy . . .; and there are mother, sisters, aunts, all waiting in the wings, ready to confirm and console. Really, I do not see why this disability which does not impair a man's fighting capacity should rob him of the privilege of serving his country. One might have enuretic regiments or even a division. They would be very successful in damp climates—the rainy season in Burma—or in night operations.

* * *

Cycling, they tell me, strengthens the muscles, ventilates the lungs, tones up the myocardium, and exercises the kidneys. I have even seen it said that it prevents piles, cures fistula-in-ano, and is one form of prophylaxis against that dread nightmare, an enlarged prostate. And yet I don't like it. Being a hospital non-resident, and having laid up the car for the duration, I thought I should maintain and prolong a fast-vanishing youth by adopting this (?) praiseworthy mode of travel. In summer-time it is endurable. Then one can enjoy the salutary effect of halcyon skies and balmy breezes; one can arrive home stimulated by the sunshine, and positively revel in the increased body-content of vitamin D. But the summer is short. Now with an envelope of snow, a floor of ice which negatives each of Newton's three laws, and winds direct from the polar regions, it is definitely not worth while. One advantage however this cycling has given me—a closer association with my fellow employees of the hospital. Cycling à deux renders our common antagonist—whether it be wind, rain, snow, or merely gravity—much less formidable. And one gets to know some points of view other than one's own, or those of one's own immediate sphere. The nurse, the technician, the masseuse, and the porter all have opinions on the modus operandi of the hospital of which the consultant, secure in his little shell, has no inkling. For the democratic doctor perhaps this broadening of the mind compensates for the rigours of winter? No; I cannot convince myself of that, but I do believe that when it's all over I shall look back on my cycling career with pleasant memories.

Parliament

LARGER GRANTS TO MEDICAL SCHOOLS

IF the universities are to play their proper part after the war, they will have to spend much more than before the war, and Sir JOHN ANDERSON, Chancellor of the Exchequer, in a statement on their financial needs said it was clear that a large share of this new expenditure must be met by the Exchequer. The Government, he said, recognised that as this expenditure would not be spread equally over the next 10 years, their grant to universities during the later years of the decade would need to be substantially increased above the level proposed for the next two years.

The University Grants Committee have recommended that the present annual vote for the universities of £2,149,000 should be increased for each of the next two financial years by the addition of £2 million for general university purposes, by £1 million for developments in the medical schools arising out of the recommendations of the Interdepartmental Committee on Medical Schools, and by £500,000 for grants for teaching hospitals as recommended by that committee. The Government have accepted these recommendations. The Goodenough Committee also estimated that an additional £10 million (at pre-war prices) will be required for capital developments in the medical schools, and the Government recognise that a substantial proportion of the money will have to be provided from the Exchequer. In view of the restrictions on building, it seems unlikely that the universities will have opportunities for any considerable capital expenditure during the next year or two, and Sir John Anderson thought it would be sufficient to include in the Estimates for the coming year a token sum of £250,000 for distribution by the University Grants Committee, without prejudice to what may be necessary in later years. Accordingly, he was including in the 1945 Estimates £5,900,000 as a grant in aid of universities, colleges, medical schools, and teaching hospitals in Great Britain.

Dr. EDITH SUMMERSKILL asked what period of grace the Chancellor proposed to give medical schools which now admit only men, to make arrangements for the admission of women before he withheld their grants. But Sir J. Anderson was glad to say that question had not so far come within his jurisdiction.

FROM THE PRESS GALLERY

Supplies in Liberated Europe

IN the House of Commons Mr. RICHARD LAW, Minister of State, said that lack of transport created almost insoluble economic difficulties in particular regions and there was inevitably very great hardship. But that did not mean that there was a serious overall shortage of food, or that the problem would be solved, or even eased, merely by pumping quantities of foodstuffs into ports already strained to capacity. France was producing as much foodstuffs as she did during the enemy occupation, and great quantities of food formerly taken by the German army were now available to the French people. The principal difficulty in France was distribution and, in the main, transport. In Belgium local production, together with SHAEF's imports, which were rapidly being increased as the produce of last harvest became exhausted, would be sufficient with proper distribution to attain the present target of 2000 calories per head per day which had been set. But in the view of the British Government the collection and distribution of foodstuffs in Belgium had not been satisfactorily organised. In the liberated areas of Holland difficulties had been increased by the continuance of military operations. Increased supplies however were coming in, and the situation was rapidly improving. But the most formidable problem would arise only when the enemy-occupied areas had been liberated.

The criticism that UNRRA had responsibilities for supplying France, say, or Belgium which it had been unable to discharge was entirely unjust. UNRRA could not intervene in any country unless it was invited by the government concerned. Both in France and Belgium the governments had preferred to take on this responsibility for themselves, in so far as it had not been, of necessity, a military responsibility. That did not mean that other governments—who were unable to finance the relief of their civil populations—would not wish to hand over this responsibility to UNRRA, or that UNRRA would not have work to do that would tax its capacity to the utmost.

For the past two years the Anglo-American authorities had been working out concrete and increasingly effective plans, the essence of which was that there should be a military period, when the areas liberated would still be in the immediate war zone, and a civilian period when fighting had ceased, or at least had passed out of the area concerned. It was accepted that during the first period the import of civilian supplies could only be carried out successfully by the military authorities. The energies of the Allied armies in the field of supplies had been inevitably confined to first-aid. The long-term task of rehabilitating the national economy, and of distributing food in excess of the standard set for the military period, belonged to the civilian period. This was by no means confined to food-supplies: it involved re-starting the whole economic life of the countries concerned. It was at this point that the national governments themselves must begin to take over. The French Provisional Government and the Belgian Government had already formulated their import programmes for the first six months of this year, and the competent British and American authorities had been instructed to facilitate procurement against these programmes so that supplies would be ready for shipment as shipping became available. The Allied Governments had, of course, decided for themselves in these programmes what supplies were most essential. Preliminary steps towards the compilation of a Netherlands Government import programme had already been taken. The United States Government appreciated as fully as did the British Government the vital importance of provisioning the liberated Allied countries in the wake of the battle.

Internal transport was one of the main problems. Since D-day 7500 lorries had been sent to the SHAEF area (i.e. France, Belgium, and liberated Holland) for civil purposes. The reconditioning of ex-Army lorries was already under way. The present production was 100 a week and was expected to rise to 350 a week by the end of March. The ultimate target was 750 a week and it was hoped to provide more new lorries as well. They were concerting with the French authorities measures to speed up locomotive repairs in France; several hundred locomotives had been sent to the Continent for the use of SHAEF and a further 200 would be sent in the near future.

The requirements of the liberated areas were in direct competition with urgent military demands. But Mr. Law was confident that our European Allies understood that the British and the American Governments were doing everything in their power, and that they understood that the main objective (theirs as well as ours) must be to bring the war in Europe to an end at the earliest possible moment.

In reply to a question by Mr. H. NICOLSON, Mr. LAW defined the position in regard to appeals by private organisations and others for the relief of civilians in Allied countries. In all but exceptional cases money collected in this country would have to be spent in the purchase of goods in this country. Goods of the kind most commonly required were in short supply and facilities to buy them could as a rule be given only to the purchasing agencies of the Allied Governments or to UNRRA. In the case of goods or articles which an individual or a society was able to spare from among those in his or its possession, it was essential that the appropriate Government department should be consulted before any appeal was issued, since otherwise rationing and other regulations might unwittingly be infringed. Subject to this, however, collections of certain kinds of goods, such as spare garments, might serve a very useful purpose. Goods so collected would have to be placed at the disposal of an Allied Government or of UNRRA who would arrange with the military authorities for the transport. The approval of the Allied agency concerned should therefore be secured before any appeal was launched. The Government warmly sympathised with the motives which had inspired the wish expressed

by several city and municipal authorities to adopt towns in liberated Europe, but they considered that the procedure was scarcely appropriate now and might well raise false hopes in the very different circumstances obtaining today.

Blighted Areas in Scotland

In the House of Commons on Feb. 14 Mr. T. JOHNSTON, Secretary of State for Scotland, moved the second reading of the Town and Country Planning (Scotland) Bill which like the English Act passed last year deals chiefly with blitzed and "blighted" areas. The blighted areas, Mr. Johnston said, were the main planning problem, for in Scotland there was appalling overcrowding. Many of the houses were totally unfit for human habitation, and many more fell deplorably short of modern standards, or were too small for family life. The overcrowding survey before the war showed that 34·5% of the houses in Greenock, 39·4% of the houses in Motherwell, and 39·7% of the houses in Clydebank were overcrowded. The 1941 census showed that in Coatbridge 23% of the houses had only one room, and about 50% had only two rooms. In parts of Glasgow and in some of the other industrial towns the density of population was as high as 127 houses, or more than 700 persons, per acre. The densities in the large English cities were only about half as high as that. Under the Bill the local planning authorities would be able to apply to the Secretary of State for orders authorising the compulsory purchase of land in these blighted areas, which required to be redeveloped as a whole, and of land to accommodate the overspill of their population and industry, and to replace their open spaces. The Bill did not provide for financial assistance to local planning authorities in the acquisition of land in the blighted areas.

Local Government Adjusted

On Feb. 15 the Commons discussed a motion by the MINISTER OF HEALTH approving the proposals of the recent white-paper on local government (*Lancet*, Jan. 13, pp. 57, 63). Mr. Willink said that the Government had three main objectives. Local government would stand or fall by those whom it could attract to its service and he hoped that a reasonable proportion of younger men and women would be chosen as members. In much of the work of local authorities women had more natural interest and often more expert knowledge than men. This was true of the health services, of housing, of maternity and child welfare, and, not least, of the care of children who had no normal home life. A high standard of local-government officers was no less important, and their recruitment, qualifications, training, and promotion were now being considered.

The second objective was to assure local authorities a greater measure of stability than at present so that they might make long-term plans. The third and pressing necessity was that Parliament should encourage vigorous and confident work throughout the local-authority field. How could authorities be expected to press on with urgent plans if they felt themselves to be in peril of extinction, and the negotiations now going on in connexion with the National Health Service necessarily assumed that the present main structure of local government would still be in existence when that service came into operation.

The proposal for a boundary commission appeared to have met with pretty general approval. Some change should perhaps be considered in the minimum limit of population for an application for county-borough status, which since 1926 had been 75,000. The general directions to the commission might also deal with the linking of town and country areas within an administrative county. It was proposed to appoint a special body to advise the Government on local-government problems in London. Fine as the work of the authorities within the county had been during the war, no-one, said Mr. Willink, was satisfied with the present lay-out of the metropolitan boroughs and the London County Council, and the Government desired to deal with these problems with all expedition.

Turning to finance he said that the block grant, which was based on the aggregate expenditure of all local authorities and was distributed among the authorities largely on the basis of their relative needs, was a form of supplementary income to local authorities, and the poorer the authority the greater was its share. Even before the war it was recognised that some revision of the formula was due. Also the recalculation of the total grant, which should have taken place in 1942, had not been made and the local authorities had suffered a substantial loss. The Government proposed to deal with both these problems as soon as possible, and there would be a bias in favour of the poorer authorities.

Social Insurance

In the House of Lords on Feb. 15 Lord NATHAN pressed for early legislation giving effect to the policies outlined in the white-papers on social insurance and industrial injury insurance which, he said, were not a programme but only a promise of one. The success of the social insurance scheme was dependent on the Government's ability to keep the cost of living stable after the war by the same methods as during the war; and the Minister of National Insurance should be required by statute to review the rates of benefit and the rates of contribution periodically in relation to ruling prices. It was essential that occupational disability should be the basis of assessing assistance and that there should be reconsideration of the retirement pensions. The need for speed was overriding, for the demobilised armies must not find this great reform still in the pigeon-holes after the last shot had been fired.

Replying for the Government Lord WOOLTON, Minister of Reconstruction, reminded their lordships that a Bill to provide family allowances has already been introduced in the House of Commons and he said the Government were going to introduce a Bill on the industrial injury insurance scheme. Other legislative proposals included the main insurance Bill, but it would be foolish to say when it would be ready, or when Parliamentary time would be available for its introduction. Now the Minister had been appointed however, they had been able to go ahead with the administration. From April 1 next the existing schemes of health insurance, pensions, and unemployment insurance, now administered by the Health Department and by the Ministry of Labour and National Service, would be administered by the Minister of National Insurance, Sir William Jowitt. Certain duties in connexion with workmen's compensation would be taken over by the new Ministry from the Home Office. The determination of old-age pension appeals would be taken over from the Health Department, and as from April 1 the Minister of National Insurance would become responsible to Parliament for the work of the Assistance Board. The Bill to deal with the break-up of the poor-law must come last, for it would not be right to deal with that until the main Bill dealing with the new rates of insurance had been settled. The transfer of all this work would involve the transfer of about 6000 people. On one issue, added Lord Woolton, he could not give any satisfaction whatever. The Government had quite definitely rejected the linking of benefits to subsistence rates. Frequent variations of benefits according to a cost-of-living standard was going to be difficult in what was primarily an insurance scheme. We wanted people to come back to this country, Lord Woolton concluded, to work here and to be happy here, to feel that they had some reasonable hope for their own development; and that, he held, was the principle of social stability—he would not use the expression social security.

QUESTION TIME

Paper for Educational Books

Sir E. GRAHAM-LITTLE asked the President of the Board of Trade whether he is aware of the dissatisfaction in university and scientific circles because the paper control exercises a censorship of publications through the allocation of the paper pool by a small committee whose activities are conducted without any opportunity of public criticism; and if he will widen the membership of this committee and state the principles upon which they are instructed to proceed.—Mr. E. DALTON: I am aware of the dissatisfaction in the universities and schools about the shortage of educational books. The small reserve of paper is set aside with the very object of relieving the shortage of these and other essential books. The committee which advises me on the distribution of this reserve consists of an independent chairman, Sir Walter Moberly, and four representative publishers, and it works on

the broad principle of helping publishers to produce books of special importance, particularly educational books and reprints of the classics, for which they cannot find paper from their normal quotas. I am glad to say that I have recently been able to arrange for an increase in the allocation to the reserve and this should help further to relieve the shortage of educational books. I do not propose to make any alteration in these arrangements at the present time.

Day Nurseries

Mr. H. McNEIL asked the Minister of Health if he was aware that his decision to close day nurseries had caused deep disappointment to many working-class mothers and had evoked protests from a number of local authorities; that nursery schools were not a substitute for nurseries as their function was different; that the post-war housing situation would make these nurseries an essential social service; and was he prepared to receive representations on the subject.—Mr. H. WILLINK replied: The war-time nurseries have been provided at the cost of the Exchequer as an aid to war production. They have been provided as a war service under emergency powers and those powers cannot be used to provide a normal welfare service.

Rehabilitation for the Deaf

Mr. F. MESSER asked the Minister of Pensions if there were any rehabilitation centres in this country for the deaf and hard of hearing similar to those in the USA; whether there was any clinic, other than that at Manchester University, in which standardised tests were made of the capacity of ex-Service or civil deafened patients to benefit from different types of aids to hearing.—Sir WALTER WOMERSLEY replied: I am making inquiries as to the scope of the work done at the centres referred to. Standardised tests are conducted by aural specialists at each of my regional offices to determine the most suitable type of aid-to-hearing appliance for ex-Service and civil deafened pensioners. In addition to the one at Manchester University, there are also special clinics at certain of the London hospitals, which are consulted in cases of difficulty.

ACCOMMODATION FOR THE TUBERCULOUS.—Mr. WILLINK said that the latest returns show that local authorities in England and Wales have provided 29,000 beds for the tuberculous and that the number of patients waiting for institutional treatment is 4500.

On Active Service

AWARDS

CBE

Colonel N. C. SPEIGHT, FRCSE, NZMF

OBE

Colonel R. A. ANDERSON, MB DUBL., RAMC
Lieut.-Colonel J. A. BATY, FRCSE, RAMC
Lieut.-Colonel J. G. M. A. BRUNET, LMS NOVA SCOTIA, RAMC
Lieut.-Colonel A. D. DAVIDSON, MB ABERD., RAMC
Major A. E. JOWETT, FRCSE, RAMC
Colonel W. J. OFFICER, MB EDIN., RAMC
Lieut.-Colonel M. H. P. SAYERS, MB LOND., RAMC
Captain H. M. JAMISON, MB LOND., RAMC
Captain L. N. B. RAJA, IAMC
Captain KEVIN MCCAUL, LRCPI, RAMC

MC

Lieutenant K. C. STEPHENSON, RAMC
Lieut.-Colonel ALEXANDER BURNS, MB GLASG., RAMC
Captain J. W. R. BATTRAM, MRCS, RAMC
Captain DUNCAN MITCHELL, MB BELF., RAMC
Major V. S. SIDHU, IAMC
Captain K. C. GUPTA, MB, IAMC
Captain P. C. SARKAR, MB, IAMC
Captain B. G. KIDDLE, IAMC

MENTIONED IN DESPATCHES

Surgeon Lieutenant G. J. POTTS, MRCS, RNVR

COMMENDED

Surgeon Lieutenant E. J. GILMORE, RINVR

For good services in fire-fighting after an explosion at Bombay docks.

PATHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND.—A meeting will be held at St. Thomas's Hospital Medical School on Friday and Saturday, March 23 and 24.

Letters to the Editor

INTRAPERITONEAL CHEMOTHERAPY

SIR,—I hope your timely leading article of Feb. 10 will stimulate a greater use of intraperitoneal sulphonamides, for if suitable drugs are correctly employed many lives will be saved and much unnecessary suffering avoided. I would add a few personal points which may be of value, having employed and studied the method for five years and used it in upwards of 300 cases.

Application, although not standardised, is best done via a saline suspension warmed to body temperature; 4–10 ounces of saline is usually necessary according to the amount of drug used, and the suspension should be squirted into the abdomen as a fine jet from a Record syringe, without a needle or rubber tube. This will guard against clumping of the particles, which is liable to cause trouble as the drug tends to remain in situ and afterwards to be discharged as a lump or become walled off. Introduction via an indwelling catheter, for the same reason, is not wise because a large quantity tends to accumulate at one point.

Dosage should depend on the amount of contamination and pus present. Pus should always be sucked out or mopped away as carefully as possible before introducing the drug. I have used quantities as large as 25 grammes with no toxic effects in a large number of cases and have repeatedly used 15 g. The choice of drug still seems to depend on the individual surgeon; I personally use sulphapyridine and have been well satisfied with the results, but have had no opportunity as yet of employing penicillin owing to the shortage of supply. I would end by briefly describing a case recently under my care.

A young schoolmistress, with a history of 48 hours' abdominal pain and vomiting, exhibited extreme abdominal rigidity and tenderness and was very toxic. General peritonitis from a ruptured appendix was diagnosed and confirmed at laparotomy. A huge quantity of pus and debris was sucked out of the abdomen and a ruptured pelvic appendix removed; 20 g. sulphapyridine was squirted into the peritoneal cavity before closure and the abdomen drained by two stab holes, the paramedian incision being closed without drainage. She was up on the fifth postoperative day, was discharged from hospital on the tenth day, and travelled home to Scotland by rail, a journey of 400 miles, on the thirteenth day. There was little drainage beyond a slight discharge for 4–5 days and the wound healed by first intention. Her doctor has since written to tell me that she is very fit.

Aylesbury. R. H. GARDINER.

RADIO-FREQUENCY CURRENTS IN TUMOUR TREATMENT

SIR,—The suggestion made by two radio engineers, Mr. Forsythe and Mr. McCormick, in your issue of Feb. 10, and your constructive annotation, provided an excellent example of the close collaboration which should at all times exist between the medical and engineering professions. The proposal to employ "gettering" for inducing local heat at the site of an intestinal neoplasm is ingenious in principle; but, as you point out, a number of difficulties arise in its practical application. Even if it be assumed that a controlled rise of temperature of a metallic pellet, accurately placed, could cause the destruction or regression of a tumour without undue damage to adjacent tissues, there still remains another effect to be considered. The high-frequency electric field which would be required to induce currents in a metallic pellet, say, within the lumen of the gut, would necessarily irradiate the parts of the body interposed between the pellet and the coil used to generate the required field. The high values of field required to heat such a pellet at a range of 2–8 inches would probably cause considerable rises of temperature in intervening adipose tissue, muscles, &c.

The answer to the problem of how best to induce accurately controlled local heating in selected tissues or organs of the body, by means of radio-frequency currents, must surely lie in the proper choice of the frequency, field intensity, and method of irradiation. Here is a fruitful field for the combined resources of the physiologist, the engineer, and the clinician.

W. PROCTOR WILSON.

MEASUREMENT OF VITAL CAPACITY

SIR,—Even from this distance I feel I must reply to the letter from Dr. D. R. Davies and his colleagues in your issue of Nov. 18 last. I am glad that independent observers have put my method to trial, and would like to make the following points in reply.

1. My own comparative observations with the spirometer were made on 51 students during their physiology course.
2. My method does *not* measure vital capacity, which by definition is the maximum expirable air.
3. How can the increase of heights of the four "cones" be "measured independently and show marked individual variations" when the sum of the increases is only 2 to 5 cm., as measured by "L"?
4. The probable error worked out from 30 consecutive measurements on each of 2 subjects was 8·7% (182 ml. approx.).
5. Vital capacity is the *maximum* expirable air, and my definition of lung expansion is the *maximum* volume increase of the chest. Therefore it is correct to take not the mean of successive readings, as in chemical estimations for example, but the *maximum* of a series of observations.
6. The error between two successive measurements with the spirometer made on students, who are at any rate used to handling apparatus, is often 400 ml., or about 10%.
7. Spirometers are not available in Army outpatients departments, and the errors in observations on personnel completely untrained in the use of apparatus, such as gardeners or apprentice bricklayers of 18½, are likely to be very great. But these men can take a deep breath.
8. The value of my method is that it is an easy clinical test; it has proved useful, and has an accuracy of 10%. But it is *not* claimed that it should replace a tried physiological measurement.
9. It is possible to take the figures away and calculate them at leisure.
10. It has been found that if spirometer readings are taken on physiology students on several successive days, an "improvement" of 1 litre in vital capacity can easily be obrained provement" of 1 litre in vital capacity can easily be obtained by "training." This surely must be due to increased skill in using the apparatus.
11. It is true that the calculations are sensitive to the measurement "L," but it is easy to make this measurement to 1 cm.; an error of half an inch is unnecessarily large. The difference in volume resulting from a difference in measurement of 1 cm. is in a small chest 200 ml., in an average chest 340 ml., and in a very big chest 610 ml., approximately, not between "500 and 1500 ml."

India Command. H. K. GOADBY.

FUNCTIONAL DISORDERS SINCE D-DAY

SIR,—Cases referred to a South Coast hospital by Army medical officers for specialists' opinions have shown new features since D-day. Though the number of cases I have seen in the last few months is not large, the proportion showing these features has been high.

In past years the cases seen have corresponded in distribution with other reported series. For example, of 77 seen in September–November, 1943, 22 were suffering from psychoneurotic disease, or psychosomatic disease with evident psychogenic element, 16 from dyspeptic conditions with smaller psychogenic element, and 14 from respiratory conditions. They were drawn, as cases still are, from units training in the area. In September–November, 1944, symptoms were not greatly different, but when histories were taken two main groups emerged:

1. Men who had served efficiently in anti-aircraft batteries for years, but had been transferred to infantry when AA defence on its former scale was no longer necessary.
2. Men who had been wounded, and after care in hospital, broke down on resuming training, with symptoms out of proportion, or not in physical relation, to the injury.

In group 1 the conditions for which the men were referred included effort syndrome, breathlessness on exertion, emphysema (slight), catarrh, and dyspepsia. The average age was 32, and it would be expected that men of that age, especially with histories of respiratory or digestive illness, would stand transfer badly.

Group 2 comprised 20 men wounded in France or the Low Countries who were referred under such headings as cardiac investigation, chest pain, effort syndrome, very doubtful hæmoptysis, scar adherent to pleura, blast (?), and mitral stenosis. In 9 the main complaint was dyspnœa on exertion, and in 6 persistent pain; 3 cases presented as dyspepsia (2 having radiological evidence of pathological appendices), and 1 had tremor and loss of weight. In the 18 radiologically normal cases physical examination was negative except for hyperæsthesia. Nervous disturbance was admitted by 6, but in history or on general clinical examination the remaining 12 showed no evidence of psychological lack of adjustment such as was plain, for example, in the 22 psychoneurotic cases seen in September–November, 1943. The average age was 27.

Until D-day it was agreed that the war neuroses common in 1914–18 were now uncommon. But the above figures seem to show that they are appearing again. If these men had not been wounded, their symptoms would probably have been more easily recognised as psychogenic. Their physical recovery preceded their emotional readiness for combat. What seems to be necessary is handling of the recently wounded with a view to preventing neurosis, restoration of physical capacity by thorough rehabilitation at an early stage, and grading of the training of units containing such men. They are probably not as fit as they appear.

Royal Sussex County Hospital. W. A. BOURNE.

PNEUMOCOCCAL LOBAR PNEUMONIA

SIR,—The paper by Dr. Dick in THE LANCET of Feb. 3, and his letter of Feb. 10 commenting on our paper of Jan. 20, raised matters of considerable importance in the use of sulphonamides in pneumonia. It seems to us that the views expressed in his article are open to serious criticism. Three-quarters of cases of pneumonia would recover without any sulphonamide whatever. We have no clear means of knowing before the final outcome whether or not any given case would be in the unfortunate quarter. All cases therefore must have chemotherapy. It is generally accepted that the more serious cases will only respond to an adequate concentration of the drug in blood and tissues. Dr. Dick disputes this view on what we consider to be very inadequate evidence. The division of 161 cases of pneumonia into two groups of 126 cases with a drug level under 6 mg. and 35 cases with a drug level over 6 mg. per 100 c.cm. is so disproportionate, statistically, that any comparison must be, to put it mildly, of little value. The analysis of the temperature reactions to the drug 96 hours and 144 hours after commencement of treatment is also unsatisfactory. A temperature response to sulphonamide (especially sulphapyridine) is generally obvious after 48 hours. Many cases of pneumonia are not admitted to hospital until the third or fourth day, and after the sixth day natural defervescence may occur at any time. The detailed analysis of 17 patients with a low drug level, all of whom recovered, is really unwise; 17 such recoveries would be by no means rare without sulphonamide treatment at all. The high incidence of complications (5 cases) may be of greater significance than the absence of deaths, but here again the figures are too small to warrant conclusions.

With so many variable factors deciding the outcome in any given patient, only large numbers and comparable cases can be used to assess the significance of a single factor such as the blood-concentration of the drug. A much sounder method is to observe the effect of raising the blood-level of the drug in a patient who is not doing well on the ordinary dosage and whose blood-level is low. This we have often done and we are quite convinced that in such cases to increase the dose of the drug, parenterally if necessary, can be a life-saving measure. Our experience is so convincing (to us) that we are prepared to blame inadequate doses of the drug as the major cause of death in certain patients.

So far as Dr. Dick's letter is concerned we should like to point out that we have never suggested that sulphamezathine is more efficacious than sulphapyridine. Experience with several hundreds of cases treated with sulphamezathine convinced us of its low toxicity, though toxic effects undoubtedly occur. We have seen moderate leucopenia in a few patients and dangerous leucopenia in one case after heavy and prolonged dosage. We have not

observed the serious complication of crystal formation and renal involvement which may follow treatment with sulphadiazine. Our personal experience of the latter drug is small, but there is ample evidence from the literature that the risk of renal damage from both sulphadiazine and sulphapyridine is a real one. The efficient therapeutic dose of sulphamezathine is higher than that of sulphapyridine, and its action is not quite so dramatic; but in mortality and morbidity rates there is little to choose between the various drugs. Sulphamezathine has decidedly fewer side-effects and is both safer and more pleasant to take.

Our main reason for writing this letter, however, is to state categorically that Dr. Dick's views regarding the efficacy of a fixed dosage of *any* sulphonamide, irrespective of the clinical condition or evidence of effective absorption, are dangerous, and that we profoundly disagree with his conclusion.

W. A. RAMSAY.
Crumpsall Hospital, Manchester. R. W. LUXTON.

LOCALISATION OF FOREIGN BODIES

SIR,—In his extremely interesting article of Dec. 9, 1944, Dr. Brailsford complains of the number of unsuccessful operations for removal of foreign bodies. These unsuccessful operations are mainly due to error in judgment on the part of the surgeon, because, as Dr. Brailsford points out, a large number of foreign bodies are best left in situ.

Dr. Brailsford omits one important point concerning foreign-body localisation. Over five years' experience of Army radiology has taught me that the time factor is one of the most important. When a rush of patients comes, it is impossible to make accurate localisations in every case; therefore this procedure should be carried out only in difficult cases. A general hospital is often called on to work on a CCS basis, with a rapid turnover of patients, only retaining such patients as cannot be moved on. The result is that a rapid stream of patients passes through the X-ray department, followed by successive streams as convoys arrive.

My practice is to screen as many of these gunshot-wound cases as possible. This was essential in the Middle East in earlier days when films were scarce. If the foreign body or bodies are small and innocuous, no marks are made on the skin. If I consider that the surgeon may wish to know the site for possible operation, anterior (or posterior) and lateral (or medial) marks are made, depending on the position of the foreign body. If thought necessary, films may be taken; otherwise a drawing of the approximate size and shape of the foreign body is included in the X-ray report. These skin markings are usually a sufficient guide to the surgeon, and I must say I have not seen "many unsuccessful operations for removal."

During the screen examinations I decide which case requires accurate localisation. If any case is thought to be difficult from the surgeon's point of view, a depth measurement is given quite rapidly by the use of Scott's localiser, a simple method which records a scale on a film. This is fairly accurate. The Army supply all X-ray departments with the McGrigor localiser, which is an accurate method; I have, however, found that a simple scale method is speedier when speed is necessary. The number of cases requiring accurate depth measurement is relatively small.

Dr. Brailsford quotes your leading article of Oct. 28, 1944, which stated that "field surgical units have facilities to produce those rough plates which are all that the forward surgeon requires." What are "rough plates?" Perhaps they are the plates kept unwashed in the operating-theatre for three days or more. The surgeon who relies on "rough plates" will be asking for trouble.

Usually it is useless to give a depth measurement for abdominal foreign bodies, because they often move in position. Extraperitoneal foreign bodies deeply placed in the posterior abdomen are difficult and require very accurate localisation. The main radiological investigation for abdominal foreign bodies should be directed to demonstrating the presence or absence of gas in the abdominal cavity. This is best done by first taking a lateral view with the patient on his back, when air can be seen between the liver and the anterior abdominal wall. A view is then taken from the side with the patient, still lying, turned on his left side. This information is much more important to the surgeon than the supposed position of a potentially mobile foreign body. The investigation should not be considered complete without films of the chest and the pelvis.

Like Dr. Brailsford, I would like to stress the importance of coöperation between surgeon and radiologist. Many of the troubles of both can be avoided if they take the small trouble of consulting each other, especially concerning the more difficult cases.

JOHN A. ROSS.

BACTERIOLOGY OF RESTAURANT CUPS

SIR,—Much has been written about the dangers of infection arising from the cracks found in the cups in public cafés and restaurants, but little appears to have been done to discover what such dangers may be. I have now studied the bacteriology of about 20 cups obtained from various public restaurants. In general, no organism has been found which could be blamed for an outbreak of diphtheria or typhoid, but the findings suggest that if such organisms were to obtain a footing, then the particular article might be a danger. All the pottery used for the tests was carefully washed and then held in a stream of boiling water for 15 seconds. The article was then broken down the original crack and a culture made from the break. The cultures were made on blood-agar, McConkey's agar and glucose-broth. In all cases, cracks on the side of the cup from which the user would drink were used. In no case was a sterile result obtained. The findings were as follows:

Cup no.	*Culture from crack*	*Growth*
1	*Staph. aureus*	free
	Hæmolytjc strep.	free
2	*Staph. aureus*	free
	Non-hæmolytic strep.	scant
	Hæmolytic strep.	scant
	Non-path. spore-bearer	moderate
3	*Staph. aureus*	free
	Non-hæmolytic strep.	free
4	Hæmolytic strep.	free
5	Hæmolytic strep.	free
6	Hæmolytic strep.	free
	Staph. aureus	scant
	B. proteus	scant
7	*Staph. aureus*	scant
	Hæmolytic strep.	scant
8	*Staph. aureus*	moderate
	Non-hæmolytic strep.	scant
9	*Staph. aureus*	moderate
	Bact. coli	scant
	Non-hæmolytic strep.	moderate
10	*Staph. aureus*	moderate
	Non-hæmolytic strep.	moderate
11	*Staph. aureus*	moderate
	Non-hæmolytic strep.	free
12	Non-hæmolytic strep.	free
	Bact. coli	scant
13	*Bact. coli*	scant
	Non-hæmolytic strep.	free
14	Non-hæmolytic strep.	free
15	*Staph. aureus*	free
	Non-hæmolytic strep.	free
	B. fæcalis alk.	scant
16	Hæmolytic strep.	moderate
	Staph. aureus	scant
17	Hæmolytic strep.	moderate
	Staph. aureus	scant
18	*Bact. coli*	free
	Staph. aureus	free
19	Friedlander's bac.	heavy
20	Hæmolytic strep.	moderate

What is surprising is the frequency of the hæmolytic streptococcus, which one would imagine would be easily destroyed. There was also a fairly frequent appearance of intestinal organisms (*Bact. coli*, *B. proteus*, &c.), and one cup gave a heavy growth of Friedlander's bacillus. The other common organism was the *Staph. aureus*. Nearly all the organisms found were such as are commonly associated with stomatitis, and with mouth and gum complaints generally.

A cracked cup, then, may be a source of danger when some infected person has previously used it. The presence of Friedlander's bacillus is also an indication that respiratory organisms may be a source of infection and it is a reasonable assumption that the Klebs-Loeffler bacillus may be found if the cups have been used by a carrier. The presence of hæmolytic streptococci is also a reminder that a cracked cup may be an agent in the spread of scarlet fever. Syphilitic infection is unlikely but not impossible, and in the same category falls tuberculosis. These organisms, particularly the former, would be difficult to discover from cracks, but the fact that even relatively easily killed organisms can be found alive in such sites suggests that their transmission is not impossible. The most obvious danger of cracked and chipped crockery is however that of ulcerative stomatitis.

The usual excuse offered for the use of cracked cups is shortage of crockery, but if the public health is to be cared for such a consideration should have no weight, and legislation should be pressed to forbid the use of faulty vessels.

London, W1. SYDNEY LINFOOT.

INGUINAL HERNIA

SIR,—In Lieut.-Colonel Brandon's interesting article of Feb. 10 there is a remark at the end of phase 2 which reads "and one that may yet save the merchant seaman from becoming a sort of animated ironclad." There is no further indication as to what special operative procedure this refers.

I know that when I was a house-surgeon at the Dreadnought Seamen's Hospital at Greenwich 20 years ago a silver filigree was often used in the repair of herniæ, and is still so used. In the last 19 years at sea as a ship's surgeon I have seen many of these cases afterwards, frequently for some years, and in my small experience the operation has been quite successful.

It would be a pity if a pithy and telling phrase was allowed to discredit what has, in good hands, proved a very satisfactory procedure.

H. M. ROYDS JONES,
Surgeon, Orient Steam Navigation Co.

A CHAIR OF PSYCHIATRY

SIR,—The letter from "Service Psychiatrist" in your last issue has evidently been written without knowledge of the full facts.

The Goodenough Committee recommended that the London County Council's plans for the development of the teaching of psychiatry should be implemented "at the earliest possible moment." The filling of the vacant chair is the keynote of this development. There is nothing sacrosanct, however, about Sept. 1 as the date on which the successful applicant should take up the post. It was regarded, for the purpose of an estimate of the cost, as the earliest date by which the position could be filled.

The advertisement for applicants will be issued by the university. All the points raised in the letter about Service applicants have been well in mind. The university will be recommended to ensure that at least three months should be allowed between the issue of the advertisement and the receipt of applications. Advice will be taken from the Service departments as to whether three months is adequate. The directors-general of the Services will be asked to circulate information as to the vacancy through Service channels. There is no doubt that if a serving officer, who could not be released, were selected, there would be no difficulty in deferring the date of his taking up the appointment until he was free.

The sentence "Your announcement suggests that the LCC is prepared to pay him provided that the University of London accepts their nominee" seems to have been written in a complete misunderstanding of how these university appointments are filled. The university appointment is made by the senate on the recommendation of a university committee. The committee comprise a few LCC representatives, three expert assessors appointed by the university, together with the vice-chancellor (in the chair) and the principal of the university. Their nomination is submitted concurrently to the university and to the LCC.

J. W. BOWEN,
Chairman, Mental Hospitals Committee, London County Council.
County Hall, London, SE1.

SIR,—May I support the protest by Service Psychiatrist in your last issue? Three years as consultant to a Force overseas have impressed upon me the really vital importance of doing nothing at home that will distract or distress the thousands of Service doctors, many of the highest qualifications and skill, whose task for a long time to come will be that of healing and assuaging the sickness and wounds of our fighting men on the land, at sea, and in the air. Every sympathy is felt for those hospital and teaching bodies who have vacancies on their staffs which they are anxious to fill, and who are perhaps suffering from the makeshift arrangements rendered necessary by a long and arduous war; but it is urged most earnestly upon all bodies with medical appointments to fill that such appointments should remain vacant until the end of the war so that doctors who may have been overseas for years may share with those who have spent the war at home at any rate the right to compete for positions for which many of them are eminently suited.

If our Service doctors are to go to fresh adventures in the Far East looking anxiously over their shoulders at the doings of their brethren at home (who have already enjoyed many advantages in addition to their uninterrupted domestic felicity) the result will be a bitter cleavage in our profession which may take many years to heal.

G. W. B. JAMES,
Brigadier; late consultant in psychiatry to the Middle East Force.
London, SW1.

SIR,—Surely a decision to make any appointment depends not only on the prospect of suitable available candidates but also on the need for filling the vacancy? A decision to call for applicants scarcely need take account of the former issue. The importance which Service Psychiatrist seems to attach to this chair would seem to argue against its being left vacant until Japan is defeated. Further, there is still ample time for any overseas psychiatrist to apply for this post. Should one of these be appointed, I hope one may reasonably anticipate that the Army authorities would see fit to release him for such an important post, and thereby give one like myself the opportunity to "see the world" in his place.

CIVILIAN PSYCHIATRIST
(not aspiring to the chair).

ŒSTROGENS IN CANCER

SIR,—The Royal Society of Medicine has arranged for a scientific committee, composed of the following fellows of the society, to investigate the effects of œstrogens in cancer:

Chairman: Prof. E. C. Dodds.
Vice-chairman: Dr. Alexander Haddow.
Hon. secretary: Dr. Frank Ellis.
Sectional representatives:
Experimental medicine and therapeutics: Mr. A. L. Bacharach and Dr. K. M. A. Perry.
Obstetrics and gynæcology: Mr. Malcolm Donaldson and Mr. James Wyatt.
Pathology: Dr. W. E. Gye and Dr. R. W. Scarff.
Radiology: Dr. Ralston Paterson and Prof. B. W. Windeyer.
Surgery: Mr. Rupert Corbett.
Urology: Mr. F. McG. Loughnane and Mr. Clifford Morson.
Coöpted: Mr. G. F. Stebbing and Dr. A. B. Bratton.
Dr. K. M. Mather was coöpted as statistical adviser.

The advisability of forming such a committee was considered by the council of the society after a preliminary investigation by the radiological section at 15 radiotherapeutic centres of the effects of stilbœstrol in more than 100 cases of cancer of the breast (see *Proc. R. Soc. Med.* 1944, **37**, 731). At its first meeting the committee decided to concentrate attention on carcinoma of the prostate, breast, and œsophagus, to confine the investigation to dienœstrol at two prescribed dosage levels, and to ask that records be kept on forms based on those of the National Radium Commission, approved for use in the Ministry of Health's scheme for cancer. It was further decided that to avoid statistical difficulties the decision regarding the dose of drug to be used should be by random selection.

This letter is written on behalf of the committee so as to provide an opportunity for members of hospital staffs who might wish to coöperate in this investigation to communicate with the undersigned.

Royal Society of Medicine, Wimpole Street, London, W1. F. ELLIS.

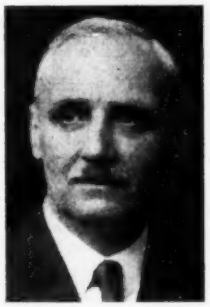
THE death is announced in New York of Dr. FRED H. ALBEE, consulting surgeon to the New York Hospital for Joint Diseases and a former president of the American Orthopedic Association. During the last war he used living bone grafts as internal splints, and the operations which bear his name make use of this technique. He was 68 years of age.

Obituary

WILLIAM THOMAS RITCHIE

OBE, MD, LL D EDIN., FRCPE, FRSE

Dr. Ritchie, who died at his home in Edinburgh on Feb. 7 at the age of 71, had retired in 1938 from the Edinburgh chair of medicine, in which he worthily maintained a great tradition. He was president of the Royal College of Physicians of Edinburgh from 1935 to 1937.



Swan Watson

Graduating in 1896 he spent some time in Vienna before returning to his own city. He served in the last war, first as medical officer with the 1st/3rd Scottish Horse, and later in charge of the medical division of the 27th General Hospital in Egypt, for which service he was mentioned in despatches and created OBE. On succeeding Dr. Lovell Gulland as professor in 1928 he devoted himself wholeheartedly to the promotion of teaching in the university and in the Royal Infirmary. At the beginning of his tenure of office, considerable changes were made in the curriculum of the clinical years, particularly the third year, so as to correlate the instruction in medicine, surgery, pathology, bacteriology, and pharmacology. When he came to the chair, the department of medicine consisted of little more than a lecture theatre and a professor, but he succeeded in securing premises and staff, and introduced demonstrations, lecture-demonstrations, and tutorials. He was constantly on the watch for material for his lectures and demonstrations; at no time did his lectures stagnate, and he made good use of his gift for freehand drawing, both on the blackboard and on paper. Besides being physician to the Royal Infirmary, he was physician and director of the medical unit of the Edinburgh municipal hospitals. Soon after the outbreak of this war, he returned to the Royal Infirmary to take temporary charge of the wards of a colleague who was on military service, and he was also physician to the Emergency Medical Hospital at Bangour.

Ritchie was the first to describe auricular flutter as a clinical condition, and in 1914 he published a monograph on it. He collaborated with Dr. John Cowan in the three editions of their *Diseases of the Heart*, and was joint author of *Medical Diagnosis, a Manual of Clinical Methods*. His many papers were mostly on his favourite subject of cardiology, and his public utterances included the Gibson lecture in Edinburgh in 1923, and the St. Cyres lecture in London in 1939.

He acted at various times as external examiner in medicine at St. Andrews, Durham, and Aberdeen. The reputation he acquired of being a hard examiner—a reputation of which he was well aware—did not come of any conscious intention; but he set himself a very high standard both of competence and honesty, and he expected the same from his students. To all his university and hospital work he brought a single-minded devotion which never flagged, and private practice was always made to take a place second to his primary duties as professor of medicine. When he retired from his chair, he did so with sorrow, and it was one of the greatest pleasures of his life that he was able to return to the charge of wards during the war. He took a keen interest in the careers of his juniors, being always approachable and willing to give his valuable advice. Though at times he was a difficult man to work with in committee, this was because of his desire to do what he felt to be best for his university and hospital. If he had a problem to tackle, he had to master it in finest detail; and having done so he pursued his chosen course with thoroughness.

His university last year conferred on him the honorary degree of LL D, and it gave him much satisfaction that at the same ceremony his elder son graduated as MB. His widow survives him with two sons and two daughters.

Notes and News

MEDICAL WAR RELIEF FUND

DURING the year 1943–44 the Medical War Relief Fund, under the chairmanship of Dr. H. Guy Dain, gave financial assistance to 35 applicants—9 more than in the previous year. Gifts amounted to £4700, and loans to £1200. The total number of beneficiaries—some of whom have received more than one award—is now 113. Substantial assistance has again been obtained for applicants from other benevolent funds, such as the Lord Mayor's National Air Raid Distress Fund, the Officers' Association, and especially the Royal Medical Benevolent Fund, and several applicants have received war service grants. For the first time since the inauguration of the Fund, distributions exceeded contributions. As in former years the Fund was well supported by doctors overseas—the total sum contributed through the Canadian Medical Association, for instance, now exceeds £2500. A subcommittee of the Fund provides medical books for British doctors who are prisoners-of-war, in coöperation with the Educational Books Section of the Red Cross and St. John organisation, which arranges their dispatch. This arrangement has two important advantages. First, the parcels sent bear the Red Cross label, which receives priority, so the books arrive sooner than they would if sent by a bookseller. Secondly, the EBS keeps a stock of medical books at Geneva and the time taken in transit is greatly shortened when a request from a prisoner-of-war can be met from this "Geneva reserve." During the year, 112 books were dispatched to 25 different camps and hospitals, the cost being £150. Only sums specially marked by subscribers are used for the purchase of books.

Examples of the cases helped by the Fund are as follows:

Dr. G had volunteered for the Forces in 1939, leaving a successful practice which, being situated in a much bombed London district, had seriously declined during his absence. His own house had been bombed, and, with a greatly decreased income, he had been obliged to find accommodation for his family in the country. He had not been able to keep up the payments of interest on a loan negotiated in connexion with the purchase of his practice, and considerable arrears had accumulated. The pressure exerted on him by the insurance company was causing him great anxiety, which was relieved by the award of a substantial gift from the Fund.

Dr. H, who had also practised in an area which was largely destroyed by bombing, died prematurely after most arduous work in the London blitz. His house was uninhabitable, and what remained of his practice was unsaleable. His widow required help, particularly for the education of her children. She was awarded a suitable gift to supplement a grant received, through the Medical War Relief Fund, from the Lord Mayor's National Air Raid Distress Fund.

Dr. I was killed while serving in the RAMC. His widow hoped to obtain remunerative employment but needed temporary assistance in meeting educational expenses. The necessary provision was made by the Fund in coöperation with the Officers Association.

Dr. K had relinquished his commission in the RAMC on medical grounds after serving for more than 3 years. His practice, which was largely private and included only a small number of insured patients, had suffered seriously during his absence, and it had been necessary to use all his capital to defray the family expenses. He was given assistance, partly in the form of a loan, to tide him over the difficult period of re-establishing himself in civilian practice.

Subscriptions should be sent to the hon. treasurer at BMA House, Tavistock Square, London, WC1.

REABLING THE DEAF

THE three American army centres for deafened soldiers, which were mentioned last week in a Parliamentary question, are established at Deshon Hospital, Butler, Pennsylvania, at Hoff Hospital, Santa Barbara, California, and at Bordon Hospital, Chickasha, Oklahoma. Many cases of deafness are discovered for the first time after the soldier has joined the Army and these men, together with those who have incurred their deafness during service, are referred to the centres. The hospitals keep a stock of deaf-aids, which are scientifically prescribed, and the soldier is able to find by experience exactly which suits him best. The fitted ear-pieces, to which the aid is attached, are now to be manufactured there from clear acrylic resins or lucite. Instruction is also given to the patients in lip-reading and speech correction.

A LIBRARIANS' JOURNAL

THE Association of Special Libraries and Information Bureaux has received a licence for the publication of the *Journal of Documentation*, and the first number of this new quarterly is to appear shortly under the editorship of Mr. Theodore Besterman. The journal will contain reviews of articles and books dealing with bibliography and librarianship and their related studies and techniques, of works of reference, especially those intended for library use, and of works dealing in a general way with the humanities and sciences. The address of the journal is 52, Bloomsbury Street, London, WC1.

University of Cambridge

On Feb. 10 the following degrees were conferred:

MD.—R. I. N. Greaves.

MB, B Chir.—* C. D. Drew, * H. H. E. Batten, * D. W. R. Lyle, * I. A. Magnus, * T. J. S. Patterson, * A. N. Pearson.

* By proxy.

Medico-Legal Society

On Thursday, Feb. 22, at 5 PM, at 26, Portland Place, London, W1, Dr. Kenneth McFadyean will speak on the need for reform in statutes affecting illegitimacy.

Society of Public Analysts and other Analytical Chemists

At 3.15 PM, on Friday, March 9, at the Chemical Society's rooms, Burlington House, Piccadilly, London, W1, Mr. S. Ernest Melling, FRIC, will deliver his presidential address embodying observations on water and water-supplies.

Medical Superintendents Society

A meeting of the council will open at the Queen's (LMS) Hotel, Birmingham, on Saturday, March 3, at 10 AM.

Institute of Hospital Almoners

Sir William Beveridge, MP, will speak at the annual meeting of the institute which is being held at Caxton Hall, Westminster, on Friday, March 9, at 5.30 PM.

Medical Films

The following films will be shown by the Scientific Film Association at 1, Wimpole Street, London, W1, on Wednesday, Feb. 28, at 5.30 PM, and again at 8 PM: *Mass Radiography, The Larynx, Liver Fluke, Accident Service.* Tickets from the secretary of the medical committee, Dr. S. J. Reynolds, 14, Hopton Road, London, SW16.

Royal Sanitary Institute

At a meeting to be held at the public library, Cheshunt, on Friday, March 2, at 3 PM, Dr. Brian Russell will speak on post-war housing requirements.

The meeting, which was to have been held at Liverpool today, Feb. 24, has been postponed.

Refresher Course on Tuberculosis

The Joint Tuberculosis Council and the National Association for the Prevention of Tuberculosis, by arrangement with Manchester corporation, are holding a refresher course for tuberculosis officers and other doctors at Manchester University from Monday to Thursday, April 23 to 26. The lecturers will be Dr. D. P. Sutherland, Mr. A. Graham Bryce, Mr. J. B. Macalpine, Mr. V. F. Lambert, Dr. J. H. Harley Williams, Dr. H. G. Trayer, Dr. C. Metcalfe Brown, Dr. George Jessel, Dr. Peter Edwards, Prof. E. D. Telford, Dr. G. Lissant Cox, and Dr. Osborne Hughes. Further information from Dr. Harley Williams, Tavistock House North, Tavistock Square, London, WC1.

Royal Society of Medicine

On Monday, Feb. 26, at 4.30 PM, at the section of odontology, Mr. Rainsford Mowlem will read a paper on osteomyelitis of the mandible; Mr. Nils Eckhoff will also speak. On Feb. 27, at 4.30 PM, at the section of medicine, Colonel V. P. Sydenstricker, UNRRA, Prof. R. B. Hawes, and Wing-Commander McCreary, RCAF, will open a discussion on the clinical recognition of vitamin deficiency. At the section of neurology, on March 1, at 4.30 PM, there will be a discussion on acute meningitis, when the speakers are to be Dr. Maurice Mitman, Dr. E. S. Duthie, and Dr. Honor Smith. On March 2, at 10.30 AM, at the section of otology, Major Frank Lathrop, MC AUS, will speak on the repair of lesions of the facial nerve, and Mr. I. Malcolm Farquharson on the masking effect of sulphonamides in the treatment of acute otitis media. At 2.30 PM on the same day Lieut.-Colonel Ralph Tovell will present a 16-mm. sound-projection apparatus to the section of anæsthetics on behalf of the American Society of Anæsthetists. Afterwards papers will be read by Air Commodore R. R. Macintosh and Dr. W. W. Mushin. At the section of laryngology at the same hour Mr. F. C. W. Capps, Mr. E. Gwynne Evans, Mr. Arnold Nove, and Miss Van Thal will open a discussion on an upper-respiratory clinic for children.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as an indication that they are necessarily available for export.

INFECTIOUS DISEASE IN ENGLAND AND WALES

WEEK ENDED FEB. 10

Notifications.—The following cases of infectious disease were notified during the week: smallpox, 0; scarlet fever, 1466; whooping-cough, 1518; diphtheria, 402; paratyphoid, 2; typhoid, 6; measles (excluding rubella), 20,627; pneumonia (primary or influenzal), 1449; puerperal pyrexia, 133; cerebrospinal fever, 94; poliomyelitis, 5; polio-encephalitis, 0; encephalitis lethargica, 1; dysentery, 324; ophthalmia neonatorum, 63. No case of cholera, plague, or typhus fever was notified during the week.

The number of service and civilian sick in the Infectious Hospitals of the London County Council on Feb. 17 was 1083. During the previous week the following cases were admitted: scarlet fever, 49; diphtheria, 24; measles, 135; whooping-cough, 24.

Deaths.—In 126 great towns there were no deaths from enteric fever, 2 (0) from scarlet fever, 14 (0) from measles, 14 (1) from whooping-cough, 5 (0) from diphtheria, 56 (6) from diarrhœa and enteritis under two years, and 67 (13) from influenza. The figures in parentheses are those for London itself.

Leeds and Birmingham each reported 7 deaths from diarrhœa. There were 3 fatal cases of whooping-cough at Liverpool.

The number of stillbirths notified during the week was 218 (corresponding to a rate of 30 per thousand total births), including 19 in London.

Appointments

BLACKWOOD, RUTH, MB LEEDS: registrar to the ear, nose, throat and ophthalmic departments of Chester Royal Infirmary.

DUNN, D. M., MB DURH., FRCSE: first asst., accident dept., Radcliffe Infirmary, Oxford.

MCCORMICK, I. S., MB GLASG.: asst. TO for Fife.

MANIFOLD, J. A., CB, DSO, MD EDIN., KHP, major-general: deputy medical superintendent Botleys Park Hospital.

PRICE, R. E. A., MB LOND.: dermatologist, Royal Bucks Hospital, Aylesbury.

SMITH, MARY, MD LOND., DRCOG: asst. MOH for Wembley.

Births, Marriages, and Deaths

BIRTHS

BEDDARD.—On Feb. 13, at Windermere, the wife of Capt. F. D. Beddard, RAMC—a daughter.

BREACH.—On Feb. 15, at Orpington, the wife of Dr. Alan Breach—a son.

BURTON.—On Feb. 14, at Bristol, the wife of Lieutenant J. S. Burton, RAMC—a son.

EVANS.—On Feb. 14, at Sheffield, the wife of Dr. Sinclair Evans, of Bakewell—a son.

EVANS.—On Feb. 15, in London, the wife of Dr. W. G. Evans—a son.

GORDON.—On Feb. 12, at Liverpool, the wife of Prof. R. M. Gordon, FRCP—a son.

HOPE.—On Feb. 11, at Woking, the wife of Dr. Eustace Hope—a son.

JOBSON.—On Feb. 13, the wife of Major P. H. Jobson, RAMC—a daughter.

LATHAM.—On Feb. 18, at Sherborne, the wife of Surgeon-Lieut.-Commander W. J. Latham, RN—a son.

MCGAVIN.—On Feb. 9, at Leicester, the wife of Mr. Donald McGavin, FRCS—a son.

MACMANUS.—On Feb. 10, in London, the wife of Surgeon Lieutenant Niall MacManus, RNVR—a son.

SITA.—On Feb. 11, at Southport, the wife of Surgeon Lieutenant E. G. Sita, MRCP, RNVR—a son.

TOWN-JONES.—On Feb. 14, at Farnham, Surrey, the wife of Dr. E. M. Town-Jones—a daughter.

MARRIAGES

MANNING—WEBBER.—On Feb. 7, in London, Frederick Everard Beresford Manning, MD, lieut.-colonel IMS, to Elizabeth Robina Webber.

PATTISON—ANDREWS.—On Feb. 5, at Colombo, Peter Pattison, surgeon lieutenant RNVR, of Sheffield, to Mary Andrews, WRNS.

WILDY—KENION.—On Feb. 3, in London, Peter Leete Wildy, MRCS, of Wadhurst, Sussex, to Joan Kenion.

DEATHS

ANDERSON.—On Feb. 17, in London, Charles Macdonell Anderson, MD EDIN.

BOLTON.—On Jan. 26, at Durban, Frank Elliott Bolton, MRCS, surgeon captain RN retd.

CURL.—On Feb. 10, at Overstrand, Norfolk, Henley Frank Curl, BA CAMB., MRCS, recently of Wokingham, Berks.

GALBRAITH.—On Feb. 11, in London, Ernest Edward Scott Joseph Galbraith, LRCPE, DPH, formerly of York.

GRAHAM.—On Feb. 16, at Darlington, James Herries Graham, MB DURH., major RAMC retd.

KELLY.—On Feb. 10, at Desford, Thomas William Gordon Kelly, MD DUBL.

STURDEE.—On Feb. 12, at Little Walsingham, Norfolk, Frederic Herbert Sturdee, FRCSE, aged 71.

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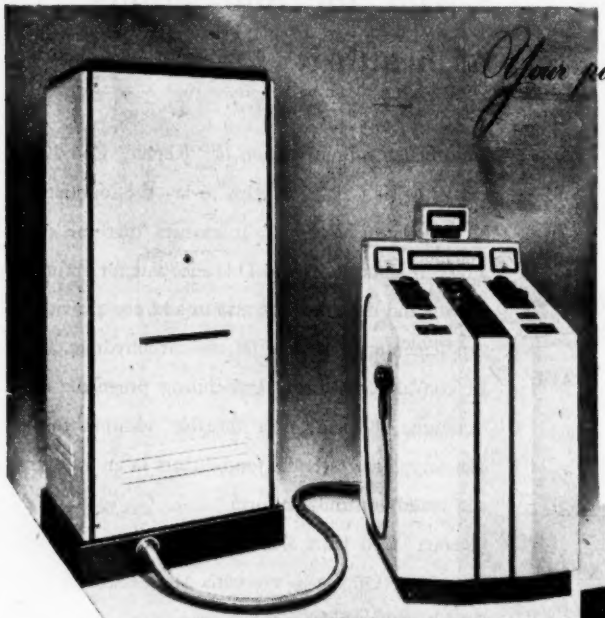

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This is a Reception Hospital in detached grounds with a separate entrance, to which patients can be admitted. It is equipped with all the apparatus for the complete investigation and treatment of Mental and Nervous Disorders by the most modern methods; insulin treatment is available for suitable cases. It contains special departments for hydrotherapy by various methods, including Turkish and Russian baths, the prolonged immersion bath, Vichy Douche, Scotch Douche, Electrical baths, Plombières treatment, etc. There is an Operating Theatre, a Dental Surgery, an X-Ray Room, an Ultra-violet Apparatus, and a Department for Diathermy and High-frequency treatment. It also contains Laboratories for bio-chemical, bacteriological, and pathological research. Psychotherapeutic treatment is employed when indicated.

MOULTON PARK

Two miles from the Main Hospital there are several branch establishments and villas situated in a park and farm of 650 acres. Milk, meat, fruit, and vegetables are supplied to the Hospital from the farm, gardens, and orchards of Moulton Park. Occupational therapy is a feature of this branch, and patients are given every facility for occupying themselves in farming, gardening, and fruit growing.

BRYN-Y-NEUADD HALL

The seaside house of St. Andrew's Hospital is beautifully situated in a Park of 330 acres, at Llanfairfechan, amidst the finest scenery in North Wales. On the North-West side of the Estate a mile of sea coast forms the boundary. Patients may visit this branch for a short seaside change or for longer periods. The Hospital has its own private bathing house on the seashore. There is trout-fishing in the park.

At all the branches of the Hospital there are cricket grounds, football and hockey grounds, lawn tennis courts (grass and hard courts), croquet grounds, golf courses, and bowling greens. Ladies and gentlemen have their own gardens, and facilities are provided for handicrafts, such as carpentry, etc.

For terms and further particulars apply to the Medical Superintendent (TELEPHONE: No. 2356 and 2357 Northampton), who can be seen in London by appointment.

STONEYCREST NURSING HOME
(Established 1922) HINDHEAD, SURREY

850 feet above sea level, facing South

Medical, Surgical and Convalescent patients received. Maternity Cases by special arrangement only. Resident Masseuse. Apply, Miss D. M. Oliver, S.R.N. ('Phone: Hindhead 577)

COURT HALL, KENTON, near EXETER
FOR THE TREATMENT OF EIGHT LADIES, VOLUNTARY, TEMPORARY AND CERTIFIED PATIENTS

CLIFFDEN, TEIGNMOUTH
FOR EARLY AND CONVALESCENT CASES Recreational Therapies are held daily by skilled Leaders

The house stands high with spacious balconies and extensive views of the South Devon Coast. Beautiful garden. Own Dairy in 25 acres. Private road to beach. There is also a charming house, **EBWORTHY, MANATON, DARTMOOR**, situated in 20 acres, 1100 ft. up for bracing moorland air

Resident Physicians—BERTHA M. MULES, M.D., B.S. ANNE S. MULES, M.R.C.S., L.R.C.P. *Telephones*—STARCROSS 259 and TEIGNMOUTH 289

SHAFTESBURY HOUSE
FORMBY-BY-THE-SEA
Nr. LIVERPOOL

Specially built and licensed for the care and treatment of a limited number of Ladies and Gentlemen suffering from NERVOUS and MENTAL breakdown. Voluntary and certified patients received. Ladies also admitted as Temporary Patients without certification. Terms moderate. *Apply*, RESIDENT PHYSICIAN, who may be seen in Liverpool, by appointment. *Tel. No. 8 Formby.*

CAMBERWELL HOUSE, 33, Peckham Road, London, S.E.5
Telegrams: "PSYCHOSIA, LONDON" FOR THE TREATMENT OF MENTAL DISORDERS *Telephone:* RODNEY 4212 (2 lines)

Completely detached Villas for mild cases. Voluntary Patients received. Twenty acres of grounds; own garden produce. Hard and grass tennis courts, putting greens, Recreation Hall with Badminton Court, and all indoor amusements. Occupational therapy, Calisthenics, Actino-therapy, prolonged immersion baths, shock and also modified insulin treatment. Chapel.

Senior Physician, Dr. HUBERT JAMES NORMAN, assisted by a resident Medical Staff and visiting Consultants

An Illustrated Prospectus giving fees, which are strictly moderate, may be obtained upon application to the Secretary

The Convalescent Branch is HOVE VILLA, BRIGHTON and is 200 ft. above sea-level

CHEADLE ROYAL CHEADLE CHESHIRE
A Registered Hospital for MENTAL DISEASES, and its Seaside Branch, GLAN-Y-DON, Colwyn Bay, N. Wales

THE object of this Hospital is to provide the most efficient means for the treatment and care of those of the Upper and Middle Classes suffering from MENTAL and NERVOUS DISEASES. The Hospital is governed by a Committee appointed by the Trustees of the Manchester Royal Infirmary. VOLUNTARY, TEMPORARY, AND CERTIFIED PATIENTS RECEIVED

For Terms and further information apply to the MEDICAL SUPERINTENDENT *Telephone:* GATLEY 2231

THE OLD MANOR, SALISBURY
Telephone: 3216 & 3217

A Private Hospital for the Care and Treatment of those of both sexes suffering from MENTAL DISORDERS

Extensive grounds. Detached Villas. Chapel. Garden Produce from own gardens. Terms very moderate.

CONVALESCENT HOME AT BOURNEMOUTH

standing in 12 acres of ornamental grounds, with separate villas, tennis courts, etc. Patients or Boarders may visit the Home by arrangement.

Illustrated Brochure on application to the Medical Superintendent, The Old Manor, Salisbury.

CRICHTON ROYAL, DUMFRIES
FOR NERVOUS AND MENTAL DISORDERS

Cases of Alcoholism and Drug Addiction are admitted. Every facility for individual treatment on the most modern lines. As the Hospital is well endowed, terms are exceptionally moderate.

Medical Certificates given anywhere in the British Isles are valid for admission of patients.

Physician Superintendent: P. K. McCOWAN, J.P., M.D., F.R.C.P., D.P.M., Barrister-at-Law. Tel.: Dumfries 1119.

FENSTANTON
at "FIVE DIAMONDS," Chalfont St. Giles, Bucks

A Private Home for the Care and Treatment of a limited number of LADIES with Mental and Nervous Disorders. Certified, Voluntary, and Temporary Patients received. Mansion with 12 acres of ground. (See *Medical Directory*, p. 2493.) Apply Resident Physician. Telephone: Little Chalfont 2046. Station: Chalfont and Latimer.

SPRINGFIELD HOUSE
'Phone: BEDFORD 3417. **Near BEDFORD**

For Mental Cases with or without Certificates.

Fees from Five Guineas per week (including Separate Bedrooms for all suitable cases without extra charge).

For forms of admission, &c., apply to the Resident Physician, CEDRIC W. BOWER.

INTERVIEWS IN LONDON BY APPOINTMENT.

THE GRANGE, near ROTHERHAM

For Ladies suffering from Nervous and Mental Disorders. Certified, voluntary and temporary patients received. Country house, beautiful grounds. 5 miles from Sheffield.

Res. Phys.: GILBERT E. MOULD, L.R.C.P., M.R.C.S.
Ecclesfield 38330

THE COTSWOLD SANATORIUM

On the Cotswold Hills, seven miles from Cheltenham, Stroud and Gloucester. Fully equipped for the treatment of all forms of Tuberculosis.

Terms: 6 to 10 guineas per week, inclusive.

Full particulars from MEDICAL SUPERINTENDENT, COTSWOLD SANATORIUM, CRANHAM, GLOUCESTER.

Telephone: Witcombe 2181 Telegrams: "Hoffman, Birdlip"

CITY OF LONDON MENTAL HOSPITAL
Near DARTFORD, KENT

Ladies and Gentlemen received for treatment under certificates, and without certificates as either VOLUNTARY or TEMPORARY PATIENTS, at a weekly fee of £2 9s., and upwards

HEIGHAM HALL, NORWICH

PRIVATE MENTAL HOME for Nervous and Mental illness. All forms of treatment available. Fees from 4 gns. per week upwards according to requirements. Vacancies occasionally exist at reduced fees on the recommendation of the patient's own physician.

Apply to Dr. J. A. SMALL. Telephone: Norwich 20080

ECCLESFIELD, STAPLEHURST, KENT

Home for the care and cure of Alcoholic cases (ladies). Fine mansion. 100 acres. Successful treatment. Catholic chapel on estate.

For terms apply to Sister Superior (Staplehurst 26111)

POSTGRADUATE STUDY: Instruction is arranged in medical, surgical, and special subjects, as circumstances permit.

Information and advice obtainable from THE FELLOWSHIP OF POSTGRADUATE MEDICINE, 1, Wimpole-street, London, W.1. LANgham 4266.

L. M. S. S. A.

FINAL EXAMINATION: SURGERY, 12th March, 8th April, 14th May, 1945. MEDICINE, PATHOLOGY, 19th March, 15th April, 22nd May, 1945. MIDWIFERY, 20th March, 16th April, 22nd May, 1945. MASTERY OF MIDWIFERY EXAMINATIONS, May and November.

For regulations apply REGISTRAR, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

UNIVERSITY EXAMINATION POSTAL INSTITUTION
17, RED LION SQUARE, LONDON, W.C.1

Over 50 years' experience

POSTAL COACHING FOR ALL MEDICAL EXAMINATIONS

MEDICAL PROSPECTUS (24 pages)
sent gratis, along with List of Tutors, &c., on application to the Principal, 17, Red Lion Square, London, W.C.1. (Telephone: HOLborn 6313.)

BRITISH POSTGRADUATE MEDICAL SCHOOL.
(UNIVERSITY OF LONDON.)

A course of lectures on WAR SURGERY OF THE EXTREMITIES will be held at the British Postgraduate Medical School during the week commencing 5TH MARCH, 1945.

The lectures include: Shock; General Principles of War Surgery of the Limbs; Traumatic Arterial Spasm; Primary Care of Nerve Injuries; Wounds of the Extremities with or without Fractures; Radiological Investigation of Wounds of the Extremities; Administrative Problems in War Surgery; Secondary Hæmorrhage; Traumatic Aneurysm; Amputations; Recent Advances in the Treatment of the Wounds; Infections; Blood Transfusions; Tetanus; Recent War Experience of Wounds of the Extremities; Wounds of Joints; War Burns; Injuries of Hands and Feet; Gas Gangrene and other Anaerobic Infections.

The fee for the course will be 1 guinea, but in certain cases the fees for serving officers recommended by their Director-General are paid by their Military Authorities. Application for admission should be sent to the Dean, British Postgraduate Medical School, Ducane-road, W.12.

ROYAL COLLEGE OF VETERINARY SURGEONS.

ELECTION OF EXAMINERS.

The Council will, at its quarterly meeting in April, elect Examiners in the following subjects:—

1st year: Chemistry and Physics.
Biology (Botany and Zoology).
2nd year: Physiology (including Biochemistry) of the Domesticated Animals.
Histology and Embryology.
Animal Management.
3rd year: Anatomy of Domesticated Animals.
Pharmacology, Therapeutics, Toxicology, and Pharmacy.
Veterinary Hygiene, Dietetics, and Animal Husbandry.
4th year: Veterinary Pathology and Bacteriology.
Veterinary Parasitology.

Applications, accompanied by not more than 3 testimonials, should be sent in not later than 20th March.

Further particulars may be obtained on application to—
FRED BULLOCK, LL.D., Secretary.
R.C.V.S., 9, Red Lion-square, London, W.C.1.

EXAMINING BOARD IN ENGLAND
by the
ROYAL COLLEGE OF PHYSICIANS OF LONDON
and the
ROYAL COLLEGE OF SURGEONS OF ENGLAND.

Notice is hereby given that the following Examination will commence on the date stated below:—

DIPLOMA IN CHILD HEALTH,
Monday, 19th March.

Candidates who have fulfilled the necessary conditions and who desire to present themselves for examination must give notice in writing to the Secretary, Examination Hall, 8–11, Queen-square, London, W.C.1, at least 21 days before the date of the Examination, transmitting at the same time such certificates as may be required by the regulations of the Board.

HORACE H. REW, Secretary.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

B. H. C. Matthews, Esq., C.B., Sc.D., will deliver the OLIVER-SHARPEY LECTURES on TUESDAY, 13TH MARCH, and THURSDAY, 15TH MARCH, at 4 P.M., at the College, Pall Mall East, S.W.1.

Subject: (1) The Effects of High Altitude on Man.
(2) The Effects of Mechanical Stresses on Man.

Any Member of the Medical Profession admitted on presentation of card. By Order of the President.

H. E. A. BOLDERO, Registrar.

UNIVERSITY OF OXFORD.

DIPLOMA IN OPHTHALMOLOGY.

The next Examination for the Diploma will commence on MONDAY, 25TH JUNE, 1945.

Two months' course of postgraduate lectures in Ophthalmology and allied subjects will commence on Monday, 30th April, 1945. Clinical work in conjunction with the lectures is available at the Oxford Eye Hospital.

All candidates must produce a certificate showing that they have duly attended a course of clinical ophthalmology for 12 calendar months in connexion with hospitals or institutions recognised for the purpose by the Board of the Faculty of Medicine.

For further information apply to the Reader in Ophthalmology, Oxford Eye Hospital.

IDA MANN, Margaret Ogilvie Reader in Ophthalmology.

LONDON COUNTY COUNCIL.

MAUDSLEY HOSPITAL MEDICAL SCHOOL.
(University of London.)

PSYCHOLOGICAL MEDICINE.

A 3 months' Course of Instruction for Part II of the Examination for the Diploma in Psychological Medicine will be held at the Maudsley Hospital, Denmark Hill, S.E.5, on Monday, Wednesday, and Friday afternoons, beginning on MONDAY, 5TH MARCH, 1945.

In conjunction with the above, and concurrently, a Course of 12 Demonstrations in Clinical Neurology will be given.

Inquiries regarding both courses should be addressed to Dr. W. W. KAY, Acting Honorary Director of the Maudsley Hospital Medical School, The Central Pathological Laboratory, at West Park Hospital, Epsom, Surrey (Telephone : Epsom 1408).

COLLEGE OF SPEECH THERAPISTS.

A Conference on SPEECH THERAPY will be held at the Royal Society of Medicine, 1, Wimpole-street, London, W.1, on 4TH, 5TH, 6TH, and 7TH APRIL, 1945.

Particulars may be obtained from the Organising Secretary, College of Speech Therapists, 86, Harley-street, London, W.1.

EXAMINING SURGEONS : Factories Act, 1937. The following appointment as Examining Surgeon under the Factories Act, 1937, is vacant. Applications should be sent to the Chief Inspector of Factories, St. James's-square, London, S.W.1.

District	*County*	*Latest date for receipt of application*
LONG MELFORD ..	SUFFOLK .	5TH MARCH, 1945

ST. MARY'S HOSPITAL, W.2. Casualty Physician (B1). Applications are invited for the above post. Candidates must have held an appointment as House Physician at this Hospital or at another general hospital approved by the Board of Management. The successful candidate will be required to hold a contract under the E.M.S. as Junior Medical Officer at a salary of £350 p.a., with board and residence provided. The appointment is, in the first instance, for a period of 6 months as from the 15th March, 1945. Suitably qualified R and W practitioners now holding B2 posts, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating nationality, date of birth, permanent address, qualifications with dates, and details of previous appointments, together with copies of not more than 3 testimonials, should reach the undersigned on or before Wednesday, 28th February.

7th February, 1945. W. PARKES, House Governor.

ST. MARY'S HOSPITAL, W.2. Medical Registrar (B1). Applications are invited for the above post. Candidates must be registered medical practitioners and Fellows, Members, or Licentiates of the Royal College of Physicians, or graduates in medicine of a university in the British Empire. The successful candidate will be required to hold a contract under the E.M.S. at a salary of not less than £350 p.a. The appointment is for a first period of 12 months as from the 15th March, 1945. Suitably qualified R and W practitioners now holding B2 posts, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating nationality, permanent address, date of birth, qualifications with dates, and details of previous appointments, together with copies of not more than 3 testimonials, should reach the undersigned on or before Wednesday, 28th February.

7th February, 1945. W. PARKES, House Governor.

ST. JOHN'S HOSPITAL, Lewisham, S.E.13. Applications are invited from registered medical practitioners for the appointment of RESIDENT SURGICAL OFFICER (B1). Applicants should have held house appointments and had surgical experience. Preference will be given to candidates holding diploma of F.R.C.S. Salary is at the rate of £250 p.a., plus panel fees for resident female staff, but previous R.S.O.s have held the E.M.S. surgical appointment of £550 p.a. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age, nationality, qualifications with dates, experience and details of previous appointments, and accompanied by copies of recent testimonials, should be sent as soon as possible to : J. C. GILBERT, Secretary-Superintendent.

SOUTH LONDON HOSPITAL FOR WOMEN, Clapham Common, S.W.4. Applications are invited from registered medical Female practitioners for the undermentioned appointments, vacant 1st April, 1945 :—

HOUSE PHYSICIAN (A). Practitioners within 3 months of qualification and liable under the National Service Acts may also apply.

GYNÆCOLOGICAL HOUSE SURGEON (B2). W practitioners who now hold A posts may also apply. This appointment is recognised for M.R.C.O.G.

Both appointments are for a period of 6 months with salary at the rate of £100 p.a., plus full residential emoluments.

Applications, stating age, nationality, qualifications with dates, and accompanied by copies of 3 recent testimonials, should be sent to the Secretary at the Hospital by Saturday, 17th March, 1945.

LONDON COUNTY COUNCIL. Temporary Assistant District MEDICAL OFFICER required for Area VII, District H (part of the Borough of Battersea). Provisional salary £250 a year, plus a surgery allowance at the rate of £12 10s. a year while the practitioner is required to see patients at his own surgery. Person appointed required to carry out duties prescribed by Public Assistance Order, 1930, and to reside in or near district. Remuneration and conditions subject to review.

The vacancy exists during the absence of the appointed Assistant District Medical Officer on war service.

Application form obtainable (stamped addressed foolscap envelope necessary) from Medical Officer of Health (S.D.2), County Hall, S.E.1, returnable by 12th March, 1945. Canvassing disqualifies.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.3. Applications are invited for the following appointments from registered medical practitioners, Male and Female, including R and W practitioners who now hold A posts :—

HOUSE PHYSICIAN (B2). The duties include work in the Out-patient Department as well as in the Wards, and the appointment is for 6 months commencing on 1st May, with an honorarium of £50, with board and residence.

HOUSE PHYSICIAN (B2) at the Sanatorium at Frimley. The appointment is for 6 months commencing on 1st May, with an honorarium of £50, with board and residence.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of 1 or more recent testimonials, should reach the undersigned not later than Saturday, 10th March, 1945.

Brompton, February, 1945. F. G. ROUVRAY, Secretary.

THE QUEEN ELIZABETH HOSPITAL FOR CHILDREN, Hackney-road, E.2. Applications are invited from registered medical practitioners, Male and Female, including practitioners within 3 months of qualification and liable under the National Service Acts, for the appointment of HOUSE PHYSICIAN (A), vacant 1st April, 1945. Appointment will be for 6 months. Salary at rate of £150 p.a., with full residential emoluments.

Application forms may be obtained from the undersigned, and should be returned, with copies of not more than 3 testimonials, on or before 8th March, 1945.

CHARLES H. BESSELL, General Secretary.

THE QUEEN ELIZABETH HOSPITAL FOR CHILDREN, Hackney-road, E.2. Applications are invited from registered medical practitioners, Male and Female, including R and W practitioners now holding A posts, for the appointment of HOUSE SURGEON-CASUALTY OFFICER (B2), vacant 1st April, 1945. Appointment will be for 6 months. Salary at rate of £150 p.a., with full residential emoluments.

Application forms may be obtained from the undersigned, and should be returned, with copies of not more than 3 testimonials, on or before 8th March, 1945.

CHARLES H. BESSELL, General Secretary.

THE WILLESDEN GENERAL HOSPITAL, Harlesden-road, N.W.10. Applications are invited from registered medical practitioners, including practitioners within 3 months of qualification and liable under the National Service Acts, for the appointment of RESIDENT HOUSE SURGEON (A). The appointment will be for a period of 6 months. Salary at the rate of £130 p.a., with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, accompanied by copies of 3 recent testimonials, should be sent immediately to : J. N. DRAKE, Secretary.

ST. MARK'S HOSPITAL FOR CANCER, FISTULA AND OTHER DISEASES OF THE RECTUM, City-road, E.C.1. Applications are invited for CLINICAL ASSISTANTSHIPS in the Out-patients' Department on Wednesday and Friday afternoons. The appointments are for 6 months in the first instance, and a fee of 3 guineas is payable on appointment.

Applications to the Secretary (from whom further particulars may be obtained).

BOROUGH OF WALTHAMSTOW. Thorpe Coombe Maternity HOSPITAL. (54 beds.) Applications are invited from qualified medical Women, including W practitioners who now hold A posts, for the appointment of ASSISTANT RESIDENT MEDICAL OFFICER (B2) at a salary of £200, plus bonus £18 5s., with board, residence, and laundry. To W practitioners the appointment will be limited to 6 months ; otherwise it may be extended to 12 months.

Forms of application, to be obtained from the undersigned, should be completed and returned, with copies of 3 recent testimonials, not later than NOON on Saturday, 3rd March, 1945.

G. A. BLAKELEY, Town Clerk.

Town Hall, Walthamstow, E.17, 3rd February, 1945.

KING EDWARD MEMORIAL HOSPITAL, Ealing. Applications are invited from registered medical practitioners, including practitioners within 3 months of qualification and liable under the National Service Acts, for the appointment of HOUSE SURGEON (A) to Special Departments (Orthopædics, &c.), including Anæsthetics, now vacant. 6 months' appointment. Salary at the rate of £150 p.a., with full residential emoluments.

Applications, stating age, nationality, qualifications with dates, and details of experience, together with copies of 2 recent testimonials, should be sent immediately to—

R. A. MICKELWRIGHT, House Governor.

MILLER GENERAL HOSPITAL, Greenwich High-road, S.E.10. Applications are invited from registered medical practitioners, Male, for the following appointment :—

HOUSE SURGEON (A). Salary is at the rate of £120 p.a., plus share of Ministry of Health allowance, with full residential emoluments. Duties to commence on 11th March, 1945. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications, giving full particulars together with copies of 3 recent testimonials, to be sent to the Secretary not later than 1st March, 1945.

30th January, 1945.

ROYAL WATERLOO HOSPITAL FOR CHILDREN AND WOMEN, Waterloo-road, S.E.1. (Male patients admitted as a war-time measure.) Applications are invited from registered medical practitioners (Male or Female), including R and W practitioners who now hold A posts, for the appointment of RESIDENT HOUSE PHYSICIAN (B2), vacant 1st April. The salary is at the rate of £200 p.a., with full residential emoluments. To R and W practitioners the appointment will be limited to 6 months.

Applications, stating age, qualifications with dates, should be sent, accompanied by copies of 3 recent testimonials, to—

J. H. TEASDALE, Secretary.

MILLER GENERAL HOSPITAL, Greenwich High-road, S.E.10. Applications are invited from registered medical practitioners for the appointment of CASUALTY OFFICER (B1) (non-resident). Duties to commence on the 4th April, 1945. Salary is at the rate of £350, plus £100 p.a. board allowance. Subject to acceptance by the E.M.S. Suitably qualified R practitioners holding B2 appointments, also those now holding B1 and rejected by the R.A.M.C., may apply.

Applications, giving full details of age, experience, &c., must reach the Secretary not later than 6th March, 1945.

16th February, 1945.

THE ROYAL MASONIC HOSPITAL, Ravenscourt Park, London, W.6. The Board of Management of the Royal Masonic Hospital give notice that there will be several vacancies on the Medical and Surgical Staff, caused by retirements by reason of age of some members of the present Staff.

The new appointments will be made at the beginning of October, 1945, and applications are invited from Fellows of the Royal College of Physicians of London or Fellows of the Royal College of Surgeons of England, as the case may be. The candidates must be engaged in consulting practice, be well established in their profession, and be members of the Senior Staff of a recognised London teaching hospital.

Applications are required to be received, at the latest, by the end of August, 1945, and should be made informally, without detailed copies of either testimonials or applications. They may be sent in the form of a cablegram should the candidate be at present serving overseas. If a successful candidate was serving actively in one of His Majesty's Forces, or was a prisoner of war, the Board of Management would be willing to arrange for him to take up his appointment at the Royal Masonic Hospital when he was released from the Services.

The vacancies to be filled are as follows :—

1 PHYSICIAN.
1 GENERAL SURGEON.
1 GYNÆCOLOGICAL SURGEON.
1 GENITO-URINARY SURGEON.
1 ORTHOPÆDIC SURGEON.
1 PHYSIOTHERAPIST.

There will also be a vacancy for :—

1 ANÆSTHETIST.

Candidates for the vacant post of Anæsthetist must be devoting themselves entirely to the practice of anæsthesia.

The retiring age for all these posts is 60.

The number of beds in the Hospital is 200–220, of which 150 Beds during the war are given over to Service cases.

Applications should be made to the Joint Honorary Secretaries, at the Hospital.

THE ROYAL MASONIC HOSPITAL, Ravenscourt Park, London, W.6. Applications are invited from registered medical practitioners, Male, for the appointment of RESIDENT SURGICAL OFFICER (B1), vacant almost immediately. Applicants should have held house appointments and had surgical experience. Preference will be given to candidates holding diploma of F.R.C.S. The salary is at the rate of £250 p.a., together with full board and lodging and laundry. Suitably qualified R practitioners now holding B2 appointments, also those now holding B1 and rejected by the R.A.M.C., may apply.

Please apply in writing to the Joint Honorary Secretaries.

THE ROYAL DENTAL HOSPITAL OF LONDON, Leicester Square, W.C.2. There are vacancies on the staff for 3 HONORARY ASSISTANT DENTAL SURGEONS. Candidates, who must be graduates or licentiates in dental surgery of one of the universities or licensing bodies recognised by the General Medical Council of the United Kingdom, are requested to send applications and testimonials or the names of referees by 31st July, 1945, to the Secretary, from whom further particulars may be obtained.

THE BOLINGBROKE HOSPITAL, Wandsworth Common, S.W.11. Applications are invited from registered medical practitioners for the appointment of HOUSE PHYSICIAN AND CASUALTY OFFICER (A), now vacant. The normal period of the appointment is 6 months. Salary is at the rate of £120 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply.

Applications, stating age, nationality, qualifications, and experience, accompanied by copies of 3 recent testimonials, should be sent as soon as possible to—

W. S. RANDOLPH BISS, Secretary-Superintendent.

WEIR HOSPITAL, Weir-road, Balham, S.W.12. Applications are invited from registered medical practitioners for the appointment of a RESIDENT HOUSE SURGEON (B2), now vacant. Salary is at the rate of £200 p.a., with full residential emoluments. W practitioners who now hold A posts may apply, when appointment will be limited to 6 months.

Applications, stating age, qualifications, nationality, and present post, and accompanied by copies of 3 recent testimonials, should be sent to the Honorary Secretary-Superintendent.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234, Great Portland-street, W.1. Applications are invited from registered medical practitioners, Male, for the appointment of RESIDENT HOUSE SURGEON (B2). Duties to commence early in March. The salary is at the rate of £200 p.a., with full residential emoluments. R practitioners who now hold A posts may apply, when the appointment will be limited to 6 months. Applications are also invited from B2 practitioners ineligible for military service.

Applications should reach the Secretary not later than 28th February.

SOUTH MIDDLESEX E.M.S. AND FEVER HOSPITAL, Mogden-lane, ISLEWORTH, MIDDLESEX. Applications are invited from registered medical practitioners for the post of HOUSE PHYSICIAN AND SURGEON (A) at the above Hospital. This involves work on the general medical, skin, general surgical, gynæcological wards. Salary is at the rate of £120 p.a., with full residential emoluments. Practitioners who are liable under the National Service Acts and within 3 months of qualification may apply.

Applications should be made to the Medical Superintendent

THE BELGRAVE HOSPITAL FOR CHILDREN, 1, Clapham-road, S.W.9. The Committee of Management invite applications from registered medical practitioners, Male and Female, for the resident appointment of HOUSE OFFICER (A), vacant now. Salary at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications, with copies of testimonials, stating age, should be forwarded as soon as possible to—

THOMAS CLAPHAM, Secretary.

MIDDLESEX COUNTY COUNCIL. Junior Assistant Medical OFFICER (B2, resident, Woman) required for maternity unit of West Middlesex County Hospital, Isleworth, Middlesex, and annexe at Chiswick. Applications invited from registered medical practitioners, including W practitioners who now hold A posts. Salary £250 p.a., plus war bonus (now £60 p.a.). Board, lodging, and laundry. Whole-time obstetric duties, such as Council may require, under supervision of Medical Director. Appointment, subject to medical examination, is for 6 months, with possibility of extension to 12 months. Post now vacant.

Applications, stating age, nationality, qualifications, and experience, enclosing copies of up to 3 recent testimonials, to Medical Director, "B3," of Hospital. Application forms not provided. Closing date 3rd March, 1945.

C. W. RADCLIFFE, Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1.

MIDDLESEX COUNTY COUNCIL. Assistant Medical Officer (Anæsthetist, B1, resident) required at Redhill County Hospital, Edgware, Middlesex. Applications invited from registered medical practitioners (including R practitioners holding B2 posts) who have held resident appointments in general hospitals and had special experience in administering anæsthetics, of which duties will mainly consist. Diploma in Anæsthetics an advantage. (R practitioners holding B1 posts ineligible unless rejected by R.A.M.C.) Salary £400 by £25 to £475 p.a. Board, lodging, and laundry. War bonus (now £60 p.a.). Appointment in first instance for 1 year; medical examination. Post vacant immediately.

Applications, stating age, nationality, qualifications, and experience, enclosing copies of up to 3 recent testimonials, to the undersigned. Application forms not provided. Closing date 3rd March, 1945.

C. W. RADCLIFFE, "B3," Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1.

THE BOLTON ROYAL INFIRMARY. (270 Beds—Resident Medical Staff, 6.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), now vacant. Salary £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications, stating age, nationality, and experience, together with copies of testimonials, to be forwarded to—

JOSEPH GRIFFITH, Superintendent-Secretary.

NEWCASTLE UPON TYNE EYE HOSPITAL. Applications are invited from registered medical practitioners, Male or Female, for the appointment of HOUSE SURGEON (B2), now vacant. Ophthalmic experience necessary. Salary £300–£350 p.a., according to experience, with full residential emoluments. R and W practitioners holding A posts may apply, when the appointment will be limited to 6 months.

Applications to the Secretary, Newcastle Eye Hospital, St. Mary's-place. Newcastle upon Tyne, 2.

THE STAFFORDSHIRE GENERAL INFIRMARY, Stafford. Appli-cations are invited from registered medical practitioners, Male and Female, for the appointments of 2 HOUSE SURGEONS (A), to commence duties immediately. Salary £196 p.a., with board-residence. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when appointments will be for 6 months.

Applications, stating age, qualifications and experience, to be sent to: A. E. COLLINS, Secretary.

Stafford, 13th December, 1944.

CHORLEY AND DISTRICT HOSPITAL, Lancs. (100 Beds.) Applications are invited from registered medical practitioners (Male and Female) for the appointment of HOUSE SURGEON (B2), now vacant. Salary is at the rate of £250 p.a., with full residential emoluments. R and W practitioners who now hold A posts may apply. The appointment will be for a period of 6 months.

Applications to be sent immediately to—

H. HILL, Secretary-Superintendent.

WALSALL GENERAL HOSPITAL. (181 Beds.) **Applications are** invited from registered medical practitioners, Male and Female, for the following posts :—

HOUSE PHYSICIAN (A). £150 a year.
HOUSE SURGEON (A). £150 a year.

Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months. Salary is at the rate specified above, with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of 3 recent testimonials, should be forwarded immediately to—

W. H. HARPER, Honorary House Governor.

THE SOUTHAMPTON CHILDREN'S HOSPITAL. Applications are invited from registered medical practitioners, Men or Women, for the appointment of RESIDENT MEDICAL OFFICER (A). Salary is at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when appointment will be for 6 months.

Applications, stating age, qualifications with dates, and nationality, and accompanied by 3 testimonials, should be sent to: ELLA K. MATTHEWS, Secretary.

CITY OF PLYMOUTH. City General Hospital. Applications are invited from duly qualified and registered medical practitioners, Male and Female, for the post of RESIDENT OBSTETRICAL OFFICER (B1). Some previous experience in a maternity department or maternity hospital is essential. The Obstetrical Officer will be in charge of the Maternity Department (normal and abnormal) at the Hospital, and of a Maternity Home outside the City, as well as the Antenatal Clinics. Salary will be at the rate of £450 p.a., rising by annual increments of £50 to £550 p.a., plus full residential emoluments and war bonus. The appointment will be subject to a satisfactory medical examination and the Local Government Superannuation Act, 1937, and terminable by 2 months' notice on either side at any time. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Further details of the post are obtainable from the Medical Superintendent of the City Hospital, Plymouth. Forms of application are not provided. Applications should be forwarded, together with copies of not more than 3 recent testimonials, as soon as possible to: T. PERSON, Medical Officer of Health.

Seven Trees, Lipson-road, Plymouth.

WINTERTON EMERGENCY HOSPITAL (1060), Sedgefield, STOCKTON-ON-TEES. Applications are invited for the following appointments:—

HOUSE SURGEON (B2). Salary at the rate of £200 p.a., plus full residential emoluments. R and W practitioners now holding A posts may apply, when the appointment will be limited to 6 months.

HOUSE SURGEON (A). Salary at the rate of £120 p.a., plus residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications to the Clerk and Steward.

SURREY COUNTY COUNCIL. Applications are invited from registered medical practitioners, Male and Female, for the following appointments:—

KINGSTON COUNTY HOSPITAL, Wolverton-avenue, Kingston-on-Thames: HOUSE SURGEON (A).

WOKING WAR HOSPITAL, Oriental-road, Woking: HOUSE SURGEON (A).

Salary is at the rate of £120 p.a., plus full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointments will be for a period of 6 months; otherwise not exceeding 1 year.

Apply to the appropriate Medical Superintendent.

CAMBRIDGESHIRE, ISLE OF ELY AND BOROUGH OF CAM-BRIDGE MENTAL HOSPITAL, FULBOURN, near CAMBRIDGE. Applications are invited for the appointment of MEDICAL SUPERINTENDENT at the above Mental Hospital, who will be required to devote his whole time to the duties of the office. The salary offered is £1000 p.a., rising by 4 annual increments of £50 to a maximum of £1200 p.a., with emoluments, including unfurnished house, valued for pension purposes at £280 p.a. The appointment will be subject to the provisions of the Asylum Officers' Superannuation Act, 1909.

Applicants should send in their applications to the undersigned, stating age, qualifications, and experience, and accompanied by 3 recent testimonials, not later than Thursday, 15th March, 1945, endorsed "Medical Superintendent."

W. MACLAREN FRANCIS, Clerk to the Visitors.

10, Peas Hill, Cambridge, 13th February, 1945.

DISTRICT INFIRMARY, Ashton-under-Lyne. (Voluntary Hospital —mainly surgical.) The Governors invite applications from duly qualified and registered practitioners for the post of CASUALTY AND ORTHOPÆDIC REGISTRAR (non-resident) for attendance preferably on 6 mornings each week. The salary would be £500 p.a., and the officer appointed would work under the general direction of the Fracture and Orthopædic Surgeon and the Honorary Visiting Staff.

Applications should be sent not later than 2nd March, 1945, to: FRANK OLIVER, General Superintendent and Secretary.

IPSWICH COUNTY BOROUGH COUNCIL. Borough General HOSPITAL. Applications are invited from registered medical practitioners, Male and Female, for the appointment of JUNIOR RESIDENT MEDICAL OFFICER (A), now vacant. Salary is at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months; otherwise for 1 year.

Applications to be sent as soon as possible to the Medical Officer of Health, Public Health Department, Elm-street, Ipswich.

BOURNEMOUTH. ROYAL VICTORIA AND WEST HANTS HOSPITAL. Applications are invited from registered medical practitioners for the appointment of RESIDENT SURGICAL OFFICER (B1) for Fracture and Orthopædic Departments, now vacant. Applicants should have held house appointments and have had suitable surgical experience. Salary is at the rate of £300 p.a. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Applications forthwith to: GORDON M. SAUL, Secretary.

ROYAL BERKSHIRE HOSPITAL, Reading. Applications are invited from registered medical practitioners, Male and Female, for the following 2 appointments:—

HOUSE SURGEON (A) (General and E.N.T.), as from the 20th April, 1945.

HOUSE PHYSICIAN (A), as from the 23rd April, 1945.

Salary is at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointments will be for a period of 6 months.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of 3 recent testimonials, should be sent immediately to—

H. E. RYAN, Secretary and House Governor.

WEST SUFFOLK GENERAL HOSPITAL, Bury St. Edmunds. (191 Civilian Beds, 244 E.M.S. and Reserve Beds.) Applications are invited from registered medical practitioners for the appointment of HOUSE SURGEON (A) with care of special departments. Salary, with full residential emoluments, will be at the rate of £175 p.a. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months; otherwise for 6 months with a possibility of renewal at the pleasure of the Committee of Management.

Applications, stating age, nationality, qualifications, and accompanied by copies of 3 recent testimonials, to be sent to—

E. E. HARDWICKE, Secretary.

WEST SUFFOLK GENERAL HOSPITAL, Bury St. Edmunds. (191 Civilian Beds, 244 E.M.S. and Reserve Beds.) Applications are invited from registered medical practitioners, including R and W practitioners now holding A posts, for the appointment of HOUSE SURGEON (B2) with care of special departments, including obstetrics and gynæcology. Salary, with full residential emoluments, will be at the rate of £200 p.a. The appointment will be for 6 months, with a possibility of renewal to other than R and W practitioners at the pleasure of the Committee of Management.

Applications, stating age, nationality, qualifications, and accompanied by copies of 3 recent testimonials, to be sent to—

E. E. HARDWICKE, Secretary.

BURY INFIRMARY (Lancs). (159 Beds.) Applications are invited from registered medical practitioners (Male or Female) for the appointment of RESIDENT CASUALTY AND OUT-PATIENT OFFICER (B2), vacant shortly. The post also includes the Special Departments of Eye and Ear, Nose, Throat. Salary is at the rate of £225 p.a., with full residential emoluments. R and W practitioners who now hold A posts may apply, when appointment will be limited to 6 months; otherwise for 1 year, and subject to renewal at the end of that period.

Applications, giving full particulars, immediately to—

H. WILKINSON, Superintendent.

WORCESTERSHIRE MENTAL HOSPITAL, Barnsley Hall, Broms-GROVE. Applications are invited from registered medical practitioners, Male and Female, for the appointment of ASSISTANT MEDICAL OFFICER (B1). Previous mental hospital experience an advantage though not essential. Commencing salary £350 p.a., plus £50 p.a. if in possession of the D.P.M., plus full residential emoluments, valued for superannuation purposes £90 p.a., rising by increments of £25 p.a. to £450, plus bonus £50. The post is pensionable under the Asylum Officers' Superannuation Act. Suitably qualified R and W practitioners holding B2 posts, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Applications should be sent to the Medical Superintendent.

NORTHAMPTON EDUCATION COMMITTEE. Applications are invited for the appointment of a fully qualified dental surgeon (Man or Woman) as ASSISTANT SCHOOL DENTAL OFFICER. Commencing salary at the rate of £500 p.a., plus war bonus (at present £40 6s. p.a.), rising by annual increments of £25 to £550 p.a., plus bonus. The appointment will be subject to the provisions of the Local Government Superannuation Act, 1937, and the successful candidate will be required to pass a medical examination.

Further particulars and form of application may be obtained by forwarding a stamped addressed envelope to the undersigned, by whom applications must be received not later than the 3rd March, 1945. H. C. PERRIN, Secretary for Education.

Education Office, "Springfield," Cliftonville, Northampton.

CHESTERFIELD AND NORTH DERBYSHIRE ROYAL HOS-PITAL. (289 Beds.) Applications are invited from registered medical practitioners for the appointment of ASSISTANT CASUALTY OFFICER AND HOUSE SURGEON (A) to Fracture Ward, now vacant. Salary £225 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications, with copies of 3 testimonials, to be addressed to: M. H. BOONE, House Governor and Secretary.

UNIVERSITY OF GLASGOW. Applications are invited from experienced research workers for I.C.I. RESEARCH FELLOWSHIPS in Chemistry, Engineering, Pharmacology, and Physics, to which some appointments may be made during the current academic year. The appointments will date from 1st October, 1945, or such later date as may be arranged in the case of successful candidates who are at present engaged in National Service. The stipends will be in the region of £600 p.a., and appointment will be for 3 years in the first instance.

Applications, with list of publications and names of 2 referees, should be sent not later than 30th April to the undersigned, from whom further particulars may be obtained.

ROBT. T. HUTCHESON, Secretary of University Court.

GENERAL HOSPITAL, Nottingham. Ear, Nose, and Throat Department (40 Beds) and large Out-patient Department. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), for the above department. Salary at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications to be addressed to the undersigned, stating age, qualifications, experience, &c., together with copies of testimonials. Duties to commence on or about 4th March.

HENRY M. STANLEY, House Governor and Secretary.

17th February, 1945.

PRESTON ROYAL INFIRMARY. (490 Beds.) Applications are invited from registered medical practitioners for appointment fo HOUSE SURGEON (A) with duties under Consulting Surgeon (post recognised for F.R.C.S. examination). Salary £150 p.a., with usual residential emoluments. R practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for 6 months.

Applications, with copy testimonials, to the Superintendent.

SURREY COUNTY COUNCIL. Surrey County Sanatorium, MILFORD, near GODALMING. (348 Beds.) Applications are invited from registered medical practitioners for the appointment of JUNIOR ASSISTANT MEDICAL OFFICER (B2). The salary is at the rate of £250 p.a., plus full residential emoluments valued at £125. R and W practitioners who now hold A posts may apply, when the appointment will be limited to 6 months; otherwise will not exceed 1 year.

Apply to the Medical Superintendent as soon as possible.

CAMBORNE-REDRUTH MINERS' AND GENERAL HOSPITAL, REDRUTH. Applications are invited for the appointment of RADIOTHERAPIST to take charge of the Therapy Department. The draft scheme for the treatment of cases of cancer in the area is not yet complete, but it is expected that the Hospital will be included as a unit in the scheme and will be affiliated with the Hospital Centre in Bristol. The commencing salary will be from £750 to £1000 p.a., according to qualifications and experience.

Full particulars may be obtained on application to—

February, 1945. J. C. FIELD, Secretary-Superintendent.

DURHAM COUNTY MENTAL HOSPITAL. Applications are invited from registered medical practitioners for the vacant appointments of 2 temporary Male ASSISTANT MEDICAL OFFICERS (B1). Salary £12 12s. per week, with full residential emoluments.

Applications, stating age, nationality, qualifications, and experience, with copies of not more than 3 recent testimonials, should be received not later than 5th March, 1945, by the Acting Medical Superintendent, Durham County Mental Hospital, Winterton, Sedgefield, Stockton-on-Tees.

ROYAL INFIRMARY, Preston. Applications are invited for the post of RESIDENT MEDICAL OFFICER (A), with resident charge of Medical Wards and duties in Clinics. Excellent facilities for diagnosis. Salary £150 p.a., with the usual residential emoluments. The Board of Management are, however, prepared to pay a commencing salary of £350 to a candidate with experience who is not liable for military service. Practitioners within 3 months of qualification and liable under the Military Service Acts may apply, when the appointment will be for 6 months.

Applications, stating particulars, and with copy testimonials, to be forwarded to the Superintendent.

HUDDERSFIELD ROYAL INFIRMARY. (321 Beds.) Resident ANÆSTHETIST AND ASSISTANT CASUALTY OFFICER (A) required to commence as soon as possible. Salary at the rate of £150, with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications to be sent to—

H. J. JOHNSON, General Superintendent and Secretary.

THE LLANELLY AND DISTRICT MEDICAL SERVICE propose to appoint shortly a CONSULTING PHYSICIAN. (This is a new post and the person appointed will act until the end of the present emergency. No permanent appointments being made in war-time.) Salary £1250 p.a., and the post, which permits of limited private consulting practice, is open to registered medical practitioners possessing a higher degree in medicine.

Further particulars are obtainable from the Secretary, W. THOMAS, F.C.I.S., 28, Coleshill-terrace, Llanelly, Carm.

SWANSEA GENERAL AND EYE HOSPITAL. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE SURGEON (B1) (who will also be required to deputise for the Resident Surgical Officer), now vacant. Applicants should have held house appointments and had surgical experience. Salary is at the rate of £275 p.a., including war bonus, with full residential emoluments. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

O. C. HOWELLS, Secretary-Superintendent.

THE CHESTER ROYAL INFIRMARY. (Normal capacity 225 Beds.) Applications are invited from registered medical practitioners, Male and Female, including R and W practitioners who now hold A posts, for the appointment of HOUSE SURGEON (B2), now vacant. The appointment will be limited to 6 months. Salary is at the rate of £150 p.a., with full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of 3 recent testimonials, should be sent to the Secretary.

ROYAL DEVON AND EXETER HOSPITAL, Exeter. Applica- tions are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), now vacant. Salary at the rate of £160 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications should reach me as soon as possible.

L. PARKHOUSE, Secretary and Manager.

NORTHAMPTON GENERAL HOSPITAL. (498 Beds.) Appli- cations are invited immediately from registered medical practitioners, Male and Female, for the post of CASUALTY OFFICER (A). Salary at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications, stating age, qualifications, and nationality, and accompanied by copies of 3 recent testimonials, should be sent to: GORDON S. STURTRIDGE.

ROTHERHAM HOSPITAL, Doncaster Gate, Rotherham, Yorks. (General Voluntary Hospital—150 Beds.). Applications are invited from registered medical practitioners, Male or Female, for the appointment of SECOND CASUALTY OFFICER AND HOUSE SURGEON (A) to Ear, Nose, and Throat and Eye Departments. Salary £225 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when the appointment will be for 6 months.

Applications should be sent at once to the Secretary-Superintendent.

LEIGH INFIRMARY, Lancs. (General Hospital, 102 Beds.) Appli- cations are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), now vacant. Salary is at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months; otherwise for 12 months.

Applications from friendly alien practitioners are also invited.

Applications, stating age and accompanied by copies of 3 testimonials, to be addressed to—

(Miss) F. M. EVISON, Acting Secretary.

MONTAGU HOSPITAL, Mexborough, Yorks. (123 Beds—4 Resi- dents.) Applications are invited from registered medical practitioners (Male), including R practitioners now holding A posts, for the post of CASUALTY AND ORTHOPÆDIC OFFICER (B2). Commencing salary £275 p.a., rising by £25 to £300 after 6 months' service. Appointment will be for a period of 6 months and may be renewed.

Applications to be forwarded to—

A. W. YOUNGS, F.C.I.S., Secretary-Superintendent.

MONTAGU HOSPITAL, Mexborough, Yorks. (123 Beds—4 Resi- dents.) Applications are invited from registered medical practitioners for the post of RESIDENT SURGICAL OFFICER (B1). Commencing salary £500–£600, according to qualifications and experience, with full residential emoluments. The post offers excellent opportunity for surgical experience and preference will be given to a candidate holding the F.R.C.S. diploma. Suitably qualified R practitioners holding B2 appointments, also those holding B1 and rejected by the R.A.M.C., may apply.

Applications to be forwarded to—

A. W. YOUNGS, F.C.I.S., Secretary-Superintendent.

HEREFORDSHIRE GENERAL HOSPITAL, Hereford. (204 Beds.) Applications are invited from registered medical practitioners, including practitioners within 3 months of qualification and liable under the National Service Acts, for the following appointment:—

JUNIOR HOUSE SURGEON (A), including House Surgeon to Ear, Nose, and Throat Department, now vacant.

The appointment will be limited to 6 months. Salary is at the rate of £150 p.a., with full residential emoluments.

Applications, stating age, qualifications, and nationality, and accompanied by copies of 3 recent testimonials, should be sent to: T. W. UPTON, Secretary.

BRADFORD ROYAL INFIRMARY. (372 Beds—8 Resident Officers). Applications are invited from registered medical practitioners (Male, single) for the following 6-months' appointments, vacant 1st April, 1945:

HOUSE SURGEON (B2). Salary £150 p.a., with full residential emoluments. R practitioners now holding A posts may apply.

HOUSE SURGEON (A). Salary £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply.

Applications, stating age, nationality, qualifications, and previous experience, with copies of 3 recent testimonials, should be sent immediately to—

H. TRUSSON, House Governor and Secretary.

LINCOLN COUNTY HOSPITAL. (Voluntary Hospital—200 Beds.) Applications are invited from registered medical practitioners, Male or Female, for the appointment of HOUSE SURGEON (A), now vacant. Salary is at the rate of £225 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when the appointment will be for 6 months.

ARTHUR MOORE, Secretary-Superintendent.

15th January, 1945.

BURTON-ON-TRENT GENERAL INFIRMARY. Applications are invited from registered medical practitioners for the appointment of HOUSE PHYSICIAN AND CASUALTY OFFICER (A). Salary is at the rate of £200 p.a., with usual emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications, stating age, qualifications, nationality, and copy testimonials, should be sent to—

E. W. THORNLEY, Superintendent-Secretary.

MANSFIELD AND DISTRICT GENERAL HOSPITAL, Mansfield. (186 Beds + 40 E.M.S. Beds.) Applications are invited from registered medical practitioners for the appointment of RESIDENT HOUSE SURGEON (A), vacant 12th March, 1945. Salary £220 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications should be sent at once to—

K. L. WARD, Secretary.

VICTORIA HOSPITAL, Burnley. (169 Beds.) Applications are invited from registered medical practitioners for the appointment of HOUSE PHYSICIAN (A), now vacant. Salary at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when appointment will be for a period of 6 months.

Applications should be sent to: J. E. WHEATCROFT, Secretary.

HERTFORDSHIRE COUNTY COUNCIL. Wellhouse Hospital, BARNET. Applications are invited from registered medical practitioners for the following appointments:—

HOUSE SURGEON (B2). Salary £200 p.a., with full residential emoluments. R and W practitioners holding A posts may also apply, when appointment will be limited to 6 months; otherwise not exceeding 1 year.

HOUSE SURGEON (A) and HOUSE PHYSICIAN (A). Salary £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointments will be for a period of 6 months; otherwise not exceeding 1 year.

Applications should be sent immediately to the Medical Superintendent.

THE WATFORD AND DISTRICT PEACE MEMORIAL HOSPITAL. (310 Beds.) Applications are invited from registered medical practitioners for the post of CASUALTY OFFICER AND RESIDENT ANÆSTHETIST (B2). Recognised for the Diploma in Anæsthetics. Salary will be at the rate of £200 p.a., with full residential emoluments. R and W practitioners who hold A posts may also apply, when appointment will be limited to 6 months.

Applications, stating age, qualifications, and experience, together with copies of 2 recent testimonials, should be sent immediately to: H. M. MASKELL, Administrator.

ROYAL SHEFFIELD INFIRMARY AND HOSPITAL. Applications are invited from registered medical practitioners, Male and Female, for the following appointments, at the Royal Hospital:—

OPHTHALMIC HOUSE SURGEON (A), now vacant. (This post is recognised for the D.O.M.S.)

ASSISTANT CASUALTY OFFICER (A), now vacant.

ASSISTANT CASUALTY OFFICER, with orthopædic duties (A), now vacant.

HOUSE PHYSICIAN (A), vacant April, 1945.

HOUSE SURGEON (A), vacant April, 1945.

Salary is at the rate of £80 p.a., with full residential emoluments. A bonus of £20 will be payable after 6 months' satisfactory service and a further bonus of £10 after a second 6 months' satisfactory service. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointments will be for a period of 6 months; otherwise they may be extended.

Applications should be sent immediately to the General Superintendent.

COUNTY COUNCIL OF DURHAM. Dryburn Emergency Hospital, Durham. Applications are invited from registered medical practitioners for the appointment of RESIDENTIAL SURGICAL OFFICER (B1), vacant at an early date. Salary ranging from £400 to £550 p.a., according to qualifications, with full residential emoluments. Applicants must have had previous hospital experience. The appointment is subject to the regulations for the time being of the County Council, relative to the payment of salary in case of sickness, and the successful applicant will be required to pass the County Council's medical examination. The appointment is terminable by 1 calendar month's notice on either side. Suitably qualified R and W practitioners holding B2 posts, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Applications, giving particulars as to age, nationality, qualifications, and experience, and date when available, should be sent immediately to the County Medical Officer of Health, Shire Hall, Durham. J. K. HOPE, Clerk of the County Council.

Shire Hall, Durham, 6th February, 1945.

YORK COUNTY HOSPITAL. (222 Beds.) Applications are invited from registered medical practitioners, Male or Female, for the appointment of HOUSE SURGEON (A), vacant 1st April, 1945, whose main duties are in the Eye, Ear, Nose, and Throat Department (37 Beds, with busy Out-patient Clinics), but who will share in the general work of the Hospital, also Casualty Duty. Salary is at the rate of £175 p.a., with full residential emoluments. This post is recognised for D.O.M.A. and D.L.O. examinations. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications to be sent by the 6th March, 1945, to—

J. R. MACKRILL, Secretary.

CUMBERLAND INFIRMARY, Carlisle. (301 Beds.) Applications are invited from registered medical practitioners for the following posts:—

1 HOUSE SURGEON (B2), vacant from 1st April next. R and W practitioners who now hold A posts may apply.

1 HOUSE SURGEON (A), vacant from 1st April next.

1 HOUSE PHYSICIAN (A), vacant immediately. Practitioners within 3 months of qualification and liable under the National Service Acts may apply.

Appointments will be for a period of 6 months. Salary is at the rate of £160 p.a., with board, &c.

Applications should be sent to the Secretary-Superintendent immediately.

Carlisle, 25th January, 1945.

VICTORIA HOSPITAL, Accrington. Applications are invited from medical practitioners for the following appointments:—

HOUSE SURGEON (B2). The salary is at the rate of £200 p.a., with full residential emoluments. R and W practitioners who now hold A posts may apply, when the appointment will be for a period of 6 months.

HOUSE PHYSICIAN (A). Salary is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications, with copies of testimonials, to Honorary Secretary, Victoria Hospital, Accrington.

MARGATE AND DISTRICT GENERAL HOSPITAL. (100 Beds.) Applications are invited from registered medical practitioners for the post of RESIDENT MEDICAL OFFICER (A), vacant 1st March, 1945. Salary is at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply, when appointment will be for a period of 6 months.

Applications should be addressed to the Secretary.

HARTLEPOOLS HOSPITAL. (130 Beds, including Maternity Unit.) Applications are invited for the posts (2) of HOUSE SURGEON (A). Salary £200 p.a., including emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications, together with copies of 2 recent testimonials, should be forwarded to: GEO. T. HOLT, Secretary-Superintendent, Hartlepools Hospital, Hartlepool, Co. Durham.

AYR COUNTY COUNCIL. Resident Anæsthetist (B1). Applications are invited from Female medical practitioners for the above appointment at the Maternity Section, Ayrshire Central Hospital (79 Beds). Suitably qualified W practitioners holding B2 or B1 appointments are invited to apply, but they must have obtained the sanction of the Scottish Central Medical War Committee to their application. The officer appointed will work under the general supervision of the County Obstetrician. Preference will be given to a candidate holding the Diploma in Anæsthetics and a previous maternity hospital experience is desirable. Salary £400–£25–£600, with war bonus and full residential emoluments. The post is within the authorised establishment but the initial appointment will be on a temporary basis subject to review later. There is no accommodation for the family of a married woman.

Application should be made not later than 28th February to the County Medical Officer, County Buildings, Ayr.

OLDHAM ROYAL INFIRMARY. (203 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of DEPUTY RESIDENT SURGICAL OFFICER (B2) to take charge of the Casualty Department and to work under the Orthopædic Surgeon, vacant 1st March. Salary is at the rate of £200 p.a., with full residential emoluments. R and W practitioners who now hold A posts may apply, when the appointment will be limited to 6 months; otherwise for a period of 12 months.

Applications should be forwarded immediately to—

F. W. BARNETT, General Superintendent and Secretary.

OLDHAM ROYAL INFIRMARY. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), vacant 6th March. The salary is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications, together with copies of 3 recent testimonials, to be submitted to—

F. W. BARNETT, General Superintendent and Secretary.

COUNTY BOROUGH OF SOUTHEND-ON-SEA. Applications are invited from registered medical practitioners of either sex, including R and W practitioners who now hold A posts, for the following Grade II appointment at the Southend Municipal Hospital, Rochford, Essex:—

RESIDENT ASSISTANT MEDICAL OFFICER (B2), duties mainly obstetrics and anæsthetics. The salary is at the rate of £325 p.a., with full residential emoluments, plus war bonus. The person appointed will be liable to pay superannuation contributions if the provisions of the Local Government Officers' Superannuation Acts are applicable. The appointment will be limited to 6 months for R or W practitioners; otherwise 1 year and subject to 1 month's notice on either side. This post becomes vacant on the 1st April, 1945.

Application forms, obtainable from the Medical Superintendent, Southend Municipal Hospital, Rochford, Essex, should be returned to him as soon as possible.

H. J. WORWOOD, Town Clerk.

Town Clerk's Office, Southend-on-Sea, 5th February, 1945.

WARRINGTON INFIRMARY. Applications are invited from registered medical practitioners, Male and Female, for the appointment of the SECOND RESIDENT HOUSE SURGEON (B2), vacant 5th March. The salary is at the rate of £200 per year, with full residential emoluments. R and W practitioners who now hold A posts may apply, when the appointment will be limited to 6 months; otherwise for a period of 12 months.

Applications, enclosing 2 copies of recent testimonials, stating age and qualifications, should be sent in to the Superintendent immediately.

ROYAL CORNWALL INFIRMARY, Truro. (351 Beds—5 Residential.) Applications are invited from registered practitioners (Male or Female) for the appointment of HOUSE SURGEON (B2) to the Ophthalmic and Ear, Nose, and Throat Departments (recognised for the D.L.O.) with some general surgical duties, vacant on or about 4th March, 1945. Salary is at the rate of £200 p.a., with full residential emoluments. R and W practitioners holding A posts may also apply, when appointment will be limited to 6 months.

Applications should be addressed to the Secretary.

ROYAL CORNWALL INFIRMARY, Truro. (351 Beds—5 Residential.) Applications are invited from registered practitioners (Male or Female) for the appointment of ORTHOPÆDIC AND CASUALTY HOUSE SURGEON (B2), vacant on or about 15th March, 1945. Salary is at the rate of £200 p.a., with full residential emoluments. R and W practitioners holding A posts may also apply, when appointment is limited to 6 months.

Applications should be addressed to the Secretary.

ROYAL CORNWALL INFIRMARY, Truro. (351 Beds—5 Residential.) Applications are invited from registered practitioners (Male or Female) for the appointment of HOUSE SURGEON (B2) to the General Surgical and Gynæcological Departments, vacant on or about 24th February, 1945. Salary is at the rate of £200 p.a., with full residential emoluments. R and W practitioners holding A posts may also apply, when appointment is limited to 6 months.

Applications should be addressed to the Secretary.

GENERAL HOSPITAL, Nottingham. (712 Beds, including E.M.S. Beds.) Applications are invited from registered medical practitioners for the appointment of HOUSE SURGEON (B1), vacant shortly. The salary is at the rate of £300 p.a., with full residential emoluments. Suitably qualified R practitioners holding B2 appointments, also those holding B1 and rejected by the R.A.M.C., may apply, when the appointment will be for a period of 12 months.

Applications, stating age, qualifications, experience, &c., together with copies of testimonials, to be sent to—

H. M. STANLEY, House Governor and Secretary.

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BURY INFIRMARY (Lancs). (159 Beds.) Applications are invited from registered medical practitioners, Male or Female, for the appointment of HOUSE SURGEON (A), vacant about the end of February. Salary is at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for 6 months; otherwise renewable.

Applications immediately to: H. WILKINSON, Superintendent.

WREXHAM AND EAST DENBIGHSHIRE WAR MEMORIAL HOSPITAL, WREXHAM. Applications are invited from registered medical practitioners, Male and Female, including R and W practitioners who now hold A posts, for the appointment of RESIDENT HOUSE SURGEON (B2), to commence immediately. Salary is at the rate of £250 p.a., with full residential emoluments. Appointment will be for 6 months.

Applications, stating age, nationality, qualifications, and accompanied by copies of testimonials, to—

LESLIE SPENCER, Secretary.

BLACKBURN AND EAST LANCASHIRE ROYAL INFIRMARY. (248 Beds—5 Residents.) Applications are invited from registered medical practitioners for the appointment of RESIDENT SURGICAL OFFICER (B1), vacant 4th April, 1945. Applicants should have held house appointments and had surgical experience. Preference will be given to candidates holding diploma of F.R.C.S. Salary is at the rate of £300. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age, qualifications, nationality, and experience, together with copies of 3 recent testimonials, should be sent as early as possible to—

T. DEWHURST, General Superintendent and Secretary.

Royal Infirmary, Blackburn.

THE PRINCE OF WALES'S HOSPITAL, Plymouth. Applications are invited from registered medical practitioners for the appointments of HOUSE SURGEON at Greenbank-road; HOUSE SURGEON for duty at Lockyer-street; and CASUALTY HOUSE SURGEON for duty at Devonport; all A posts, vacant forthwith. Salary in each case is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointments will be for a period of 6 months.

ARTHUR R. CASH, General Superintendent.

Head Office, Greenbank-road, Plymouth, 16th January, 1945.

CAMERON HOSPITAL, West Hartlepool. (86 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A). Duties to commence as soon as possible. Salary at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications, stating age, qualifications, nationality, and experience, together with copies of 3 recent testimonials, should be sent as soon as possible to: Miss P. M. BETTS, Secretary.

NORTHAMPTONSHIRE COUNTY COUNCIL. Park Hospital, WELLINGBOROUGH. (120 Service Beds.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of JUNIOR RESIDENT MEDICAL OFFICER (A), now vacant. Salary is at the rate of £200 p.a., with full residential emoluments. There is a staff of visiting specialists. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months; otherwise not exceeding 1 year.

Applications, stating age, qualifications, and experience, should be sent as soon as possible to—

J. ALAN TURNER, Clerk of the County Council.

County Hall, Northampton, February, 1945.

WORCESTER ROYAL INFIRMARY. Applications are invited for the position of HOUSE SURGEON (A). The salary will be at the rate of £120 a year, with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months.

Applications, with copies of not more than 3 testimonials, should be addressed to—

HAROLD WEBB, Acting Superintendent-Secretary.

CHELMSFORD AND ESSEX HOSPITAL, London-road, Chelmsford, ESSEX. (235 Beds.) Applications are invited for the posts of HOUSE SURGEON (A) and HOUSE PHYSICIAN (A), Male or Female, to commence at the end of March. Salary £250 p.a., plus board, lodging, and laundry. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointments will be for 6 months.

Apply, with recent testimonials, to—

R. G. MORRISH, House Governor and Secretary.

POOLE JOINT SANATORIUM BOARD. Poole Sanatorium. (315 Beds.) Applications are invited from registered medical practitioners (Male or Female) for the appointment of JUNIOR ASSISTANT MEDICAL OFFICER (B2). The salary will be £250 p.a., with full residential emoluments, plus war bonus. R and W practitioners who now hold A posts may apply, when the appointment will be limited to 6 months; otherwise 1 year. The Sanatorium is a modern one with facilities for thoracic surgery.

Applications, stating age, experience, and qualifications, together with the names of 2 persons to whom reference may be made as to professional ability, should be sent as soon as possible to the Medical Superintendent, Poole Sanatorium, Nunthorpe, near Middlesbrough. G. S. MCINTIRE, Clerk.

ROYAL NATIONAL SANATORIUM, Bournemouth. Medical OFFICER required to take full charge during absence of Medical Superintendent (B1 appointment). Applicants must be experienced in pulmonary tuberculosis and sanatorium treatment. Salary £10 per week, with board, residence, and laundry. Duties to commence 31st March.

Applications, with testimonials, to be addressed to the Secretary as above.

CITY OF COVENTRY. Municipal General Hospital. Applications are invited from Male registered medical practitioners, including practitioners within 3 months of qualification and liable under the National Service Acts, for the appointment of JUNIOR ASSISTANT RESIDENT MEDICAL OFFICER (A) at the above Hospital. The post will be for a period of 6 months, but terminable at any time by 1 month's notice. Salary will be at the rate of £250 p.a., plus war bonus and full residential emoluments.

Further particulars may be had on request to the Medical Superintendent at the Hospital. Applications should be made at once to: A. MASSEY, Medical Officer of Health.

The Council House, Coventry, 16th February, 1945.

BRISTOL ROYAL HOSPITAL. (Incorporating the Bristol Royal INFIRMARY and BRISTOL GENERAL HOSPITAL.) Applications are invited for the post of SECOND CASUALTY OFFICER AND RESIDENT ANÆSTHETIST (A). Salary at the rate of £80 p.a. War bonus at the rate of £20 p.a. will also be paid, with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply.

Applications to be made on application forms to be obtained from: ELLIS C. SMITH, F.C.I.S., Secretary and House Governor, Bristol Royal Infirmary.

HULL ROYAL INFIRMARY. Applications are invited from registered medical practitioners for the posts of CASUALTY OFFICERS (A), vacant March and April. Duties in the Casualty and Out-patient Department and some ward work. Salary £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointments will be for a period of 6 months.

Applications to: R. J. CARLESS, House Governor.

PERTH ROYAL INFIRMARY. Applications are invited from registered medical practitioners, Male, including those within 3 months of qualification and liable under the National Service Acts, for the post of HOUSE SURGEON (A), vacant 1st April. The appointment is for a period of 6 months, and salary is at the rate of £100 p.a., with full residential emoluments. Practitioners liable to National Service must have obtained the sanction of the Scottish Central Medical War Committee to their applications.

Applications to be addressed to the Administrative Medical Officer.

SUDAN MEDICAL SERVICE. There are unexpected vacancies for British-born medical Men. Candidates should be under 30 years of age and unmarried. Salary commences at £E.720 (approximately £738) a year. Postgraduate experience is essential and preference is given to those who have held B appointments or equivalent posts. The maintenance of the efficiency of the African Medical Services has been generally recognised as a vital contribution to the United Nations war effort and the Central Medical War Committee raises no objection to those selected taking up appointments in the Sudan.

Full particulars may be obtained from Dr. H. C. SQUIRES, Consulting Physician to the Sudan Government, 93, Harley-street, W.1 (Telephone: WEL 3423), who would be glad to see intending applicants at the earliest possible date.

Woman Doctor Assistant wanted by Woman Practitioner, end of March. South Coast Town. Salary £650 indoor. Car or allowance.—Address, No. 552, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Wanted, with view to Partnership, after a preliminary assistantship, F.R.C.S. to specialise in Ear, Nose, and Throat work. Hospital appointment will be available. Preference given to young man with war service record.—Address, No. 553, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Experienced Lady Secretary desires appointment as Private Secretary to Consultant, or similar post, in London.—Address, No. 554, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Doctors, Male and Female, required for Locums and Assistantships. Vacancies for Hospital Locums and Ships' Surgeons. Practices and Partnerships for disposal.—Write: A. SHAW, Medical Transfer Agent, Premier Buildings, 88, Church-street, Liverpool.

Old-established Medical Practice in Eastern Counties for Sale on account of health reasons. Average receipts over £2000. Non-panel. Suitable for well-qualified man.—Address, No. 548, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Ophthalmologist in good residential S. African town desires to sell well-established Practice, with hospital appointment. Particulars available in London.—Address, No. 555, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Medical Photographs and Drawings for illustrations, records, &c. —Write for particulars: E. O. SONNTAG, 159, Bickenhall Mansions, Baker-street, W.1. WELbeck 8860.

The following Practices are for Sale:—

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2000 panel. House to rent. Sheffield.

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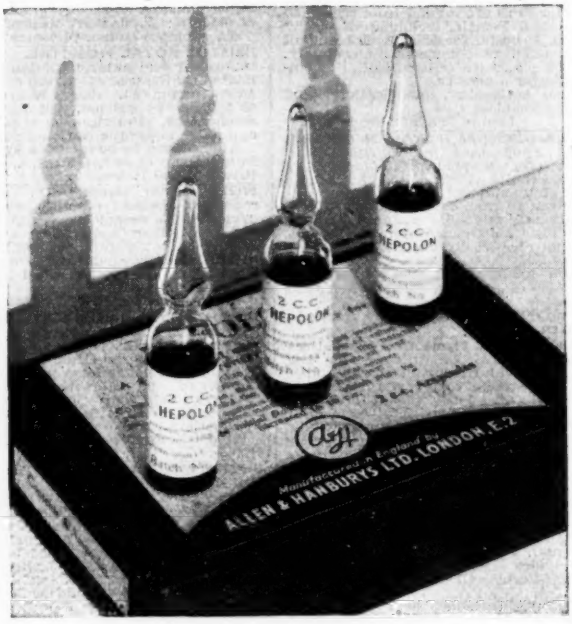
Microscope Lamps, W.H. high-intensity transformer lamps for darkground and photomicrography, totally enclosed with built-in transformer, £9 9s.

Microscope Adapter for Leica camera (say whether Elmar or Summar lens). Ideal for serial investigations, where the camera is used intermittently, each 35s.

Microscopes: booklet "On the Choice and Use of a Second-hand Microscope" (Cole), 1s. 9d. post free.

WALLACE HEATON LTD. (MAYfair 7511—ask for Mr. Cole), 127, New Bond-street, W.1.



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